SUPERMICRO®

SUPERMICRO® X7QC3
SUPERMICRO® X7QCE

USER'S MANUAL

Revision 1.0a

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERMICRO X7QC3/X7QCE motherboard. The SUPERMICRO X7QC3/X7QCE supports four Intel® Xeon 7300/7200 Quad-Core/Dual-Core processors with a front side bus speed of 1.066 GHz. With four Xeon 7300/7200 processors built in, the X7QC3/X7QCE offers superior computing performance, system reliability and power efficiency optimized for embedded, storage, and communications platforms. The features supported by this motherboard include the Extended Memory 64 Technology (EM64T), large Integrated L2 cache capacity (of up to 8 MB), DBS (Demand-Based Switching) with Enhanced Intel SpeedStep Technology, Enhanced Reliability and Manageability, Streaming SIMD Extensions 3 (SSE3) Instructions, and Intel Execute Disable Bit Features. The X7QC3/X7QCE offers a superb solution for intensive, complex I/O environments, and is ideal for cost-effective, heterogeneous system integration. Please refer to the motherboard specifications pages on our web site (http://www.supermicro.com/products) for updates on supported processors. This product is intended to be professionally installed.

Manual Organization

Chapter 1 describes the features, specifications and performance of the mainboard and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system.

If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS POST Codes. **Appendix B and Appendix C** list HostRAID Setup Guidelines and Other Software Driver and Program Installation Instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Danger/Caution: Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury.

Warning: Important information given to ensure proper system installation or to prevent damage to the components.

Note: Additional Information given to differentiate various models or to ensure correct system setup.

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Chapter 1
Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer. All are included in the Retail Box.

One (1) Supermicro Mainboard

One (1) ribbon cable for IDE devices (CBL-036L-03)

One (1) floppy ribbon cable (CBL-022L)

Four (4) SATA cables (CBL-0044L)

Two (2) SAS cables (CBL-0097-02) (*X7QC3 only)

One (1) I/O backpanel shield (CSE-PT07L)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual

Contacting Supermicro

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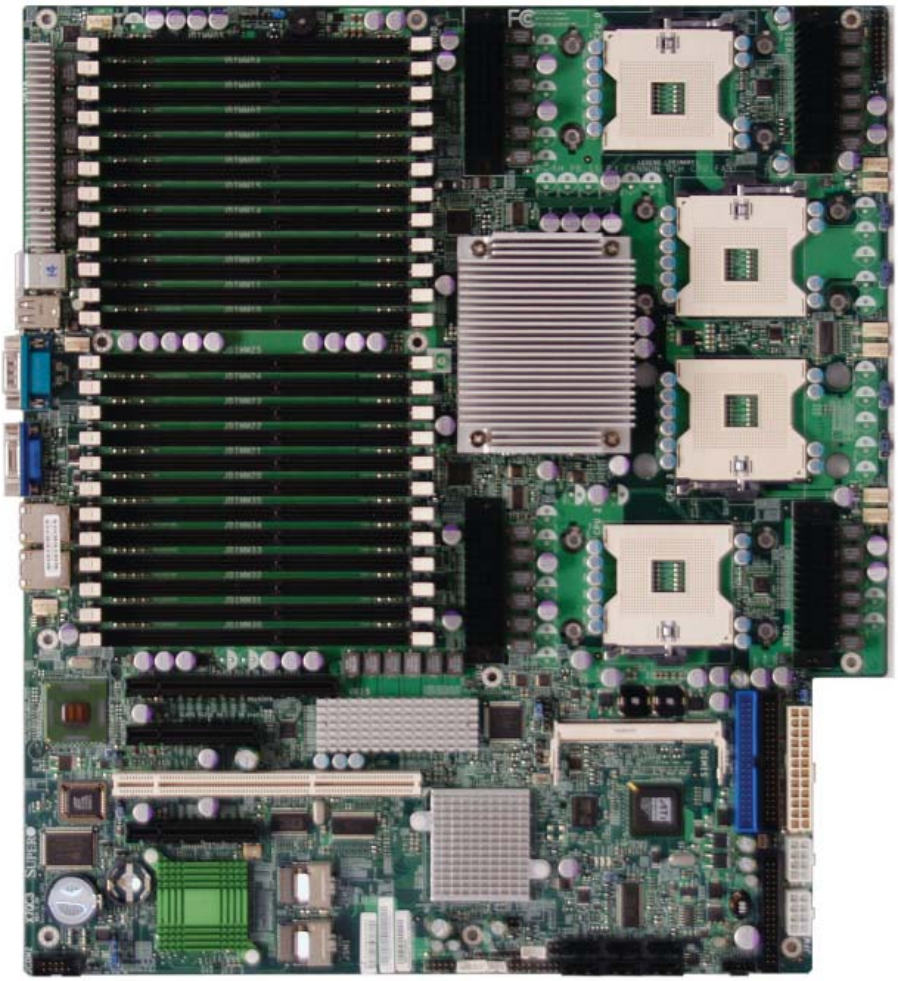
Tel: 886-2-8228-1366, ext.132 or 139

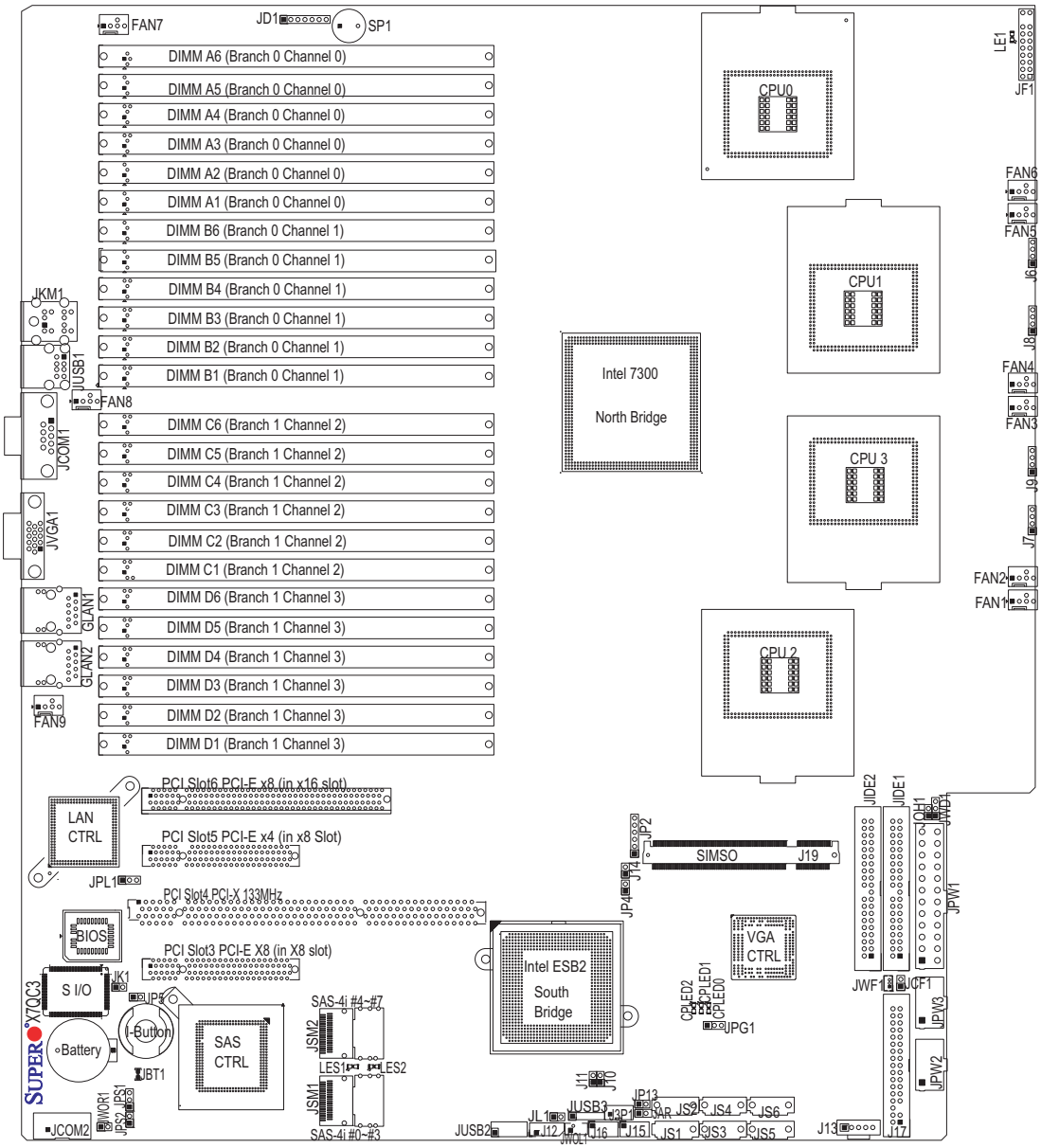
SUPER® X7QC3/X7QCE Image



Note: The drawings and graphics shown in this manual were based on the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in the manual.

SUPER® X7QC3/X7QCE Motherboard Layout

(not drawn to scale)



Notes:

1. Jumpers not indicated are for test purposes only.
2. See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
3. "■" indicates the location of Pin 1.
4. SAS is available on the X7QC3 only.

Quick Reference X7QC3/X7QCE

Jumper	Description	Default Setting
J10/J11	SMB to PCI Slots #3/#4/#5/#6	Open/Open (Disable)
JBT1	CMOS Clear	(See Pg. 2-23)
JCF1	Compact Flash Master/Slave	Pins 1-2 (Master)
JP5	CPU PWR Select	Open (130W for 2U)
JP13	3rd PWR Failure Detect	Open (Disabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JPS1	Onboard SAS Enable	Pins 1-2 (SAS Enabled)
JPS2	MegaRAID Enable	Closed (MegaRAID)
JWD1	Watch Dog Enable	Pins 1-2 (WD Reset)

Connector	Description
DIMM A1~DIMM D6	Memory DDR2 ECC Fully Buffered (FBD) DIMM Slots
FAN 1-9	System cooling/chassis fans
GLAN1/2	G-bit Ethernet Ports
J12	IPMB Header (of the IPMI module)
J13	PWR SMBus I^2C Connector
J15/J16	Serial General Purpose Input/Output Headers 1~2
J17	Floppy Disk Drive Connector
J19	SIMSO Slot
J3P1	PWR Supply Module Failure
JAR	Alarm Reset
JCOM1/JCOM2	COM1/COM2 Serial Port and Serial Connector
JD1	Power LED(pins1-3)/SpeakerHeader (pins 4-7)
JF1	Front Control Panel Connector
JK1	Keylock Header
JL1	Chassis Intrusion Header
JIDE1/JIDE2	IDE#1 HDD, IDE#2 HDD (reserved for Comport Flash)
JKM1	Keyboard/Mouse Connectors
JOH1	Overheat LED
JPW1	24-Pin ATX PWR Connector
JPW2/JPW3	+12V 8-pin PWR Connectors
JS1~JS6	Intel SATA 0-5 Connectors
JSM1/JSM2	SAS-4i Connection #0~3 (JSM1), SAS-4i #4~7 (JSM2)
JUSB1	Back Panel USB 0/1
JUSB2/3	Front Panel Accessible USB 2/3(JUSB2),USB4(JUSB3)
JVGA1	VGA Port
JWF1	Compact Card PWR Connector
JWOL1	Wake-on-LAN Header
JWOR1	Wake-on-Ring Header

LED Indicator	Description
LE1	Power LED (*See Note 4 on Pg. 1-4.)
LES1/LES2	SAS Act LED (LES1), SAS Heartbeat LED (LES2)

Motherboard Features

CPU

- Quad Intel® Xeon 7300/7200 Quad-Core/Dual-Core processors at a front side bus speed of 1.066 GHz

Memory

- 24 240-pin DIMM sockets with support up to 192 GB ECC FBD (Fully Buffered) DDR2 667/533 Memory (*See Section 2-3 in Chapter 2 for DIMM Slot Population.)

Chipset

- Intel 7300 chipset, including: the 7300 Memory Control Hub (MCH) and the Enterprise South Bridge 2 (ESB2)

Expansion Slots

- Two PCI-E x8 slots (one in x8 slot: PCI Slot3, one in x16 slot: PCI Slot6)
- One PCI-E x4 slot (in x8 slot: PCI Slot3)
- One 64-bit PCI-X 133 MHz slot (PCI Slot4)

BIOS

- 8 Mb AMI® Flash ROM
- APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0, Plug and Play (PnP), USB Keyboard support, Hardware BIOS Virus Protection and SMBIOS 2.3

PC Health Monitoring

- Onboard voltage monitors for CPU cores, Memory Voltage, Chipset Voltage, +1.8V, +3.3V, +5V, +12V, –12V, +3.3V standby, +5V standby and VBAT
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- Low noise fan speed control
- Platform Environment Control Interface (PECI) ready
- CPU fan auto-off in sleep mode
- Pulse Width Modulation (PWM) fan control
- I^2C temperature sensing logic
- Thermal Monitor 2 (TM2) support
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection
- Power-up mode control for recovery from AC power loss
- Chassis intrusion detection
- System resource alert via Supero Doctor III

ACPI Features

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Power-on mode for power recovery

Onboard I/O

- Intel ESB2 supports six SATA ports (with RAID0, RAID1, RAID10 and RAID5 supported in the Window OS environment)
- The 82575EB supports two Giga-bit LAN ports (w/IOAT supported)
- One EIDE Ultra DMA/100 bus master interface
- One floppy port interface
- Two COM ports (1 header, 1 port)
- Up to four USB 2.0 (Universal Serial Bus) (2 ports, 1 Header)
- ATI ES1000 Graphic Controller (with 32 MB)
- Super I/O: Winbond W83627DHF

Other

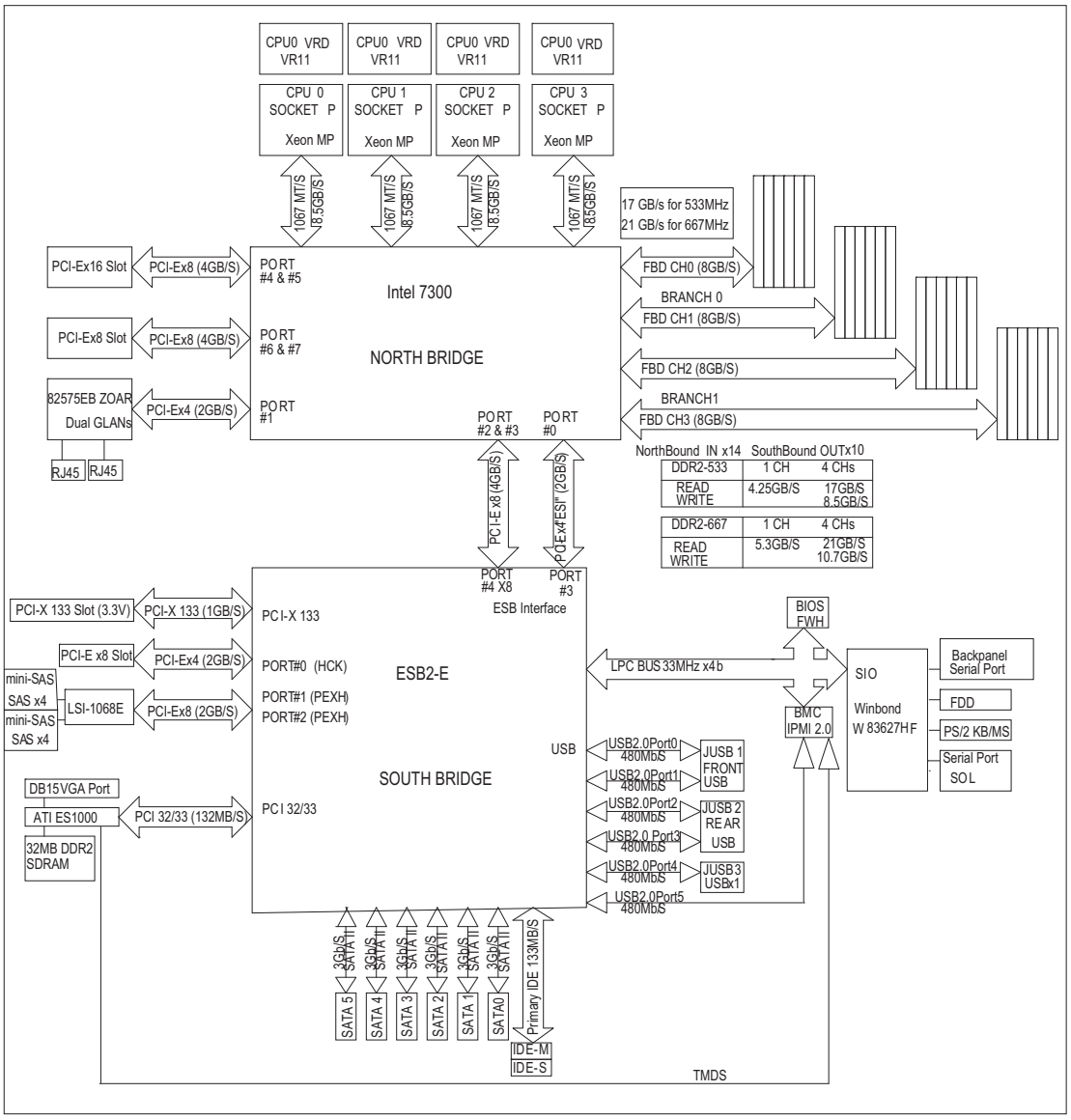
- External modem ring-on
- Wake-on-LAN (WOL)
- Wake-on-Ring (WOR)
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS

CD/Diskette Utilities

- BIOS flash upgrade utility and device drivers

Dimensions

- Proprietary 16 x 14.3" (406.4mm x 363.2mm)



Block Diagram of the Intel 7300 Chipset

Note: This is a general block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

1-2 Chipset Overview

Built upon the functionality and the capability of the Intel 7300 chipset, the X7QC3/X7QCE motherboard provides the performance and feature set required for Quad processor-based systems with configuration options optimized for communications, storage, computation or database applications. The 7300 chipset supports Quad Intel® Xeon 7300/7200 Quad-Core/Dual-Core processors with front side bus speeds of up to 1.066GHz. The chipset consists of the 7300 Memory Controller Hub (MCH), and the Enterprise South Bridge 2 (ESB2).

The 7300 MCH chipset is designed for symmetric multiprocessing across four independent front side bus interfaces. Each front side bus uses a 64-bit wide, 1066MHz data bus that transfers data at 8.5 GB/s for a total bandwidth of 34 GB/s. The MCH chipset connects up to 32 Fully Buffered DIMM 2 modules, providing a total memory bandwidth of up to 25.5 GB/s (for 533) and 32 GB/s (for 667), capable of addressing up to 512 GB of memory. The MCH chipset also provides seven x4 PCI-Express and one x4 ESI interface (ESI) to the ESB2. In addition, the 7300 chipset offers a wide range of Reliability, Availability & Serviceability (RAS) features, including memory interface ECC, x4/x8 Single Device Data Correction, CRC, parity protection, memory mirroring, memory sparing and Hot-Plug support on the PCI-E. (**Note**: If the processor used also supports these features.)

Designed to be used with conjunction of the 7300 chipset, the Xeon 7300/7200 Quad-Core/Dual-Core Processor provides a feature set as follows:

The Xeon 7300/7200 Quad-Core/Dual-Core Processors

- L1 Cache Size: Instruction Cache (32KB), Data Cache (32KB)
- L2 Cache Size: 4MB/8MB (4MB shared between two cores for a total of 8MB per processor)
- Data Bus Transfer Rate: 8.5 GB/s
- Multi-Processor Support: 1 Processor per FSB
- Package: 604-pin mPGA

7300 MCH Features

- Quad independent processor buses (1 processor per bus)
- Each bus supports up to 4 physical processor cores
- 40-bit address ability support
- Double-pumped address buses with a peak address bandwidth of 533 million addresses/second
- Parity protection on address and data signals

Intel ESB2 Features

- Dual Interface to Memory Controller
- Supports PCI-Express Rev. 1.0a, PCI/PCI-X Rev. 2.3
- Hot-Plug Controller
- ACPI Power Management Logic Support

1-3 Special Features

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power-on state. See the Power Lost Control setting in the Advanced Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the X7QC3/X7QCE. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

Onboard Voltage Monitors for the CPU Cores, Chipset Voltage, Memory Voltage, +1.8V, +3.3V, +5V, +12V, -12V, +3.3V Standby, +5V Standby and VBAT.

An onboard voltage monitor will scan these voltages continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature reaches a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to lower the CPU temperature. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem. You can also configure Supero

Doctor to provide you with warnings when the system temperature goes beyond a pre-defined range.

1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as DVD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP and Windows 2003 Servers/Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again "awaken" the whole system. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system "alive." In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the Standby or Off state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

Wake-On-LAN

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has

WOL capability. In addition, an onboard LAN controller can also support WOL without any connection to the WOL header. The 3-pin WOL header is to be used with a LAN add-on card only.

Note: Wake-On-LAN requires an ATX 2.01 (or above) compliant power supply.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The X7QC3/X7QCE can only accommodate 24-pin ATX power supply. Although most power supplies generally meet the specifications required by the motherboard, some are inadequate. You should use one that will supply at least 400W of power. In addition, the 12V 8-pin is also required for adequate power supply to the CPU. Also your power supply must supply 1.5A for the Ethernet ports.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (For detailed information, please refer to the web site at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 Kb, 720 Kb, 1.2 Mb, 1.44 Mb or 2.88 Mb disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.It also provides two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 Kbps, 500 Kbps, or 1 Mbps, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power manage-

ment through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

Notes

Chapter 2
Installation

2-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Processor and Heatsink Installation

When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes: 1. Always connect the power cord last and remove it before adding, removing or changing any components. Make sure to install the processor into the CPU socket before you install the CPU heatsink.

2. Intel's boxed Xeon CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, use only Intel-certified heatsink and fan.

3. Make sure to install the heatsink backplate and the motherboard into the chassis before you install the CPU heatsink and fan. (*See below.)

4. When purchasing a motherboard with an Xeon 7300/7200 Quad-Core/Dual-Core INT-mPGA CPU Socket, make sure that the CPU plastic cap is in place and none of the CPU Socket pins are bent; otherwise, contact the retailer immediately.

5. All graphics shown in this manual are for reference only. The components that came with your motherboard may or may not look exactly the same as the pictures shown in this manual.

Installation Procedures

For proper system setup, please follow the procedure below:

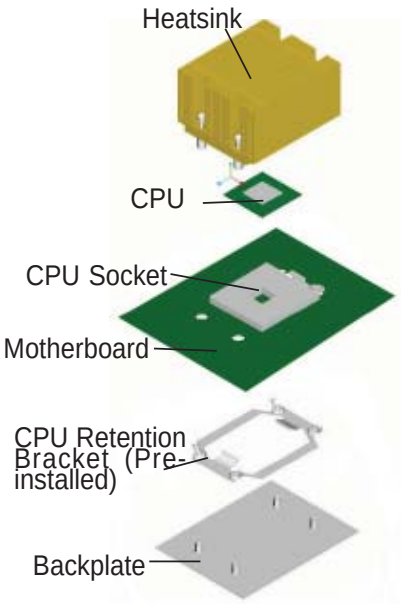
1. Install the heatsink backplate into the chassis if needed.

2. Install the motherboard into the chassis.

3. Install the CPU onto the motherboard.

4. Install the heatsink or/and cooling fans (if any).

5. Connect fan and power cables (if any).



CPU Installation

1. Lift the lever on the CPU socket: lift the lever completely as shown on the picture on the right; otherwise, you will damage the CPU socket when power is applied. *

Note: if multiple CPUs are installed, be sure to install CPU1 first.

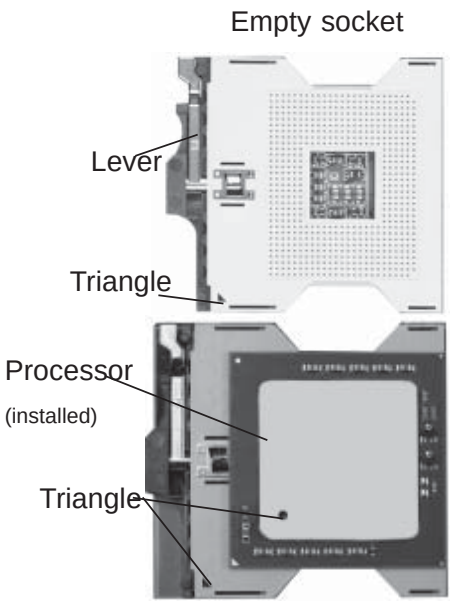
2. Insert the CPU in the socket, making sure that pin 1 of the CPU aligns with pin 1 of the socket (both corners are marked with a triangle).

N**ote**: When using only one CPU, install it into CPU socket #1. Please note that sockets #2, #3 and #4 will be automatically disabled if only one CPU is used.

3. Press the lever down until you hear the *click* so you can be sure that the CPU is securely installed in the CPU socket.

Figure 2-1. PGA604 Socket: Empty and with Processor Installed

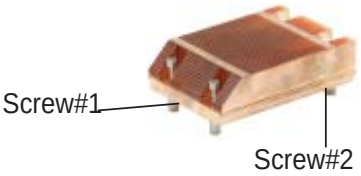
Warning! Make sure you lift the lever completely when installing the CPU; otherwise, damage to the socket or CPU may occur.



Installation and Removal of the Heatsink

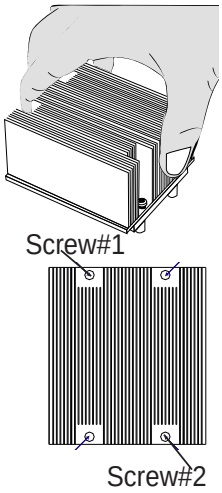
CEK Passive Heatsink

CEK Heatsink Installation



1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

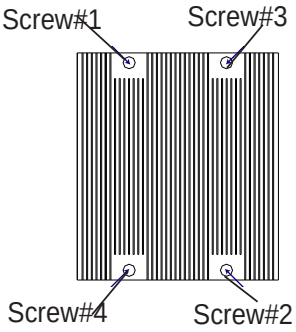


3. Screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.

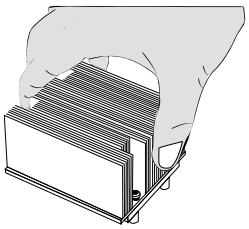
To Uninstall the Heatsink

Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions on the next page to uninstall the heatsink to avoid damaging the CPU or the CPU socket.



1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture on the right.

2. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)



3. Once the heatsink is loosened, remove the heatsink from the CPU socket.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

2-3 Installing DIMM Modules

Note: Check the Supermicro web site for recommended memory modules.

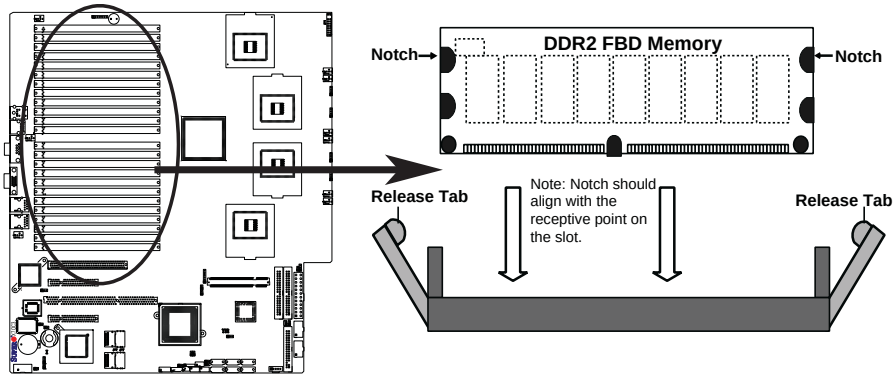
CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

DIMM Installation

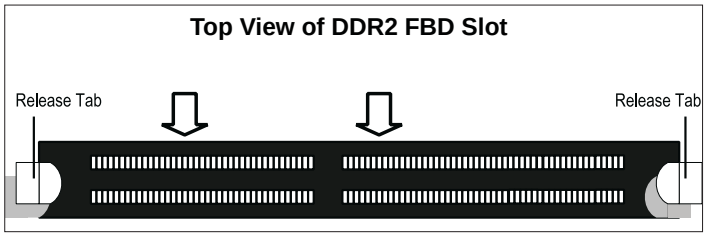
1. Insert the desired number of Fully Buffered DDR2 modules into the memory slots, starting with DIMM #A1. To enhance memory performance, please install two memory modules of the same type and of the same speed at a time, beginning with DIMM #A1, DIMM #A2, then DIMM #B1, DIMM #B2.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to avoid incorrect memory installation.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Installing FBD DDR2 Memory Modules



<u>To Install</u>: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Memory Support

1. The X7QC3/X7QCE supports up to 192 GB fully buffered (FBD) ECC DDR2 667/533 in 24 DIMM slots (4 channels, two branches). Single memory scheme, two-way interleaved memory scheme and four-way interleaved memory scheme are supported. Using four-way interleaved memory will result in best memory performance. Please use memory modules of the same type, same speed, same timing and same organization on a motherboard.

2. For memory update granularity: Two DIMMs are required in non-mirrored mode (one pair on a selected branch), and four DIMMs are required in mirrored mode (on both branches).

Memory Configuration Table

	Branch 0												Branch 1											
	Channel 0 (Bank 0)						Channel 1 (Bank 1)						Channel 2 (Bank 2)						Channel 3 (Bank 3)					
2 DIMMs	A1	---	---	---	---	---	B1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4 DIMMs	A1	---	---	---	---	---	B1	---	---	---	---	---	C1	---	---	---	---	---	D1	---	---	---	---	---
8 DIMMs	A1	A2	---	---	---	---	B1	B2	---	---	---	---	C1	C2	---	---	---	---	D1	D2	---	---	---	---
12 DIMMs	A1	A2	A3	---	---	---	B1	B2	B3	---	---	---	C1	C2	C3	---	---	---	D1	D2	D3	---	---	---
16 DIMMs	A1	A2	A3	A4	---	---	B1	B2	B3	B4	---	---	C1	C2	C3	C4	---	---	D1	D2	D3	D4	---	---
18 DIMMs	A1	A2	A3	A4	A5	---	B1	B2	B3	B4	B5	---	C1	C2	C3	C4	C5	---	D1	D2	D3	D4	D5	---
24 DIMMs	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6

*Notes: i. "---" indicates DIMM slots not populated. ii. Both FDB DDR 533MHz and 668MHz are supported; however, please insert memory modules of the same type and same speed on a motherboard, starting with Slot A1. iii. Installing pair(s) of memory modules of the same type and the same speed will result in Interleaved memory. Single-way, Two-way Interleaved and four-way Interleaved memory schemes are supported. For best performance, please install pairs of memory modules in both Branch 0 and Branch 1, which will result in four-way interleaved memory scheme. iv. For memory to work properly, please follow the restrictions listed in the table.

3. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the Memory Availability Table below for details.)

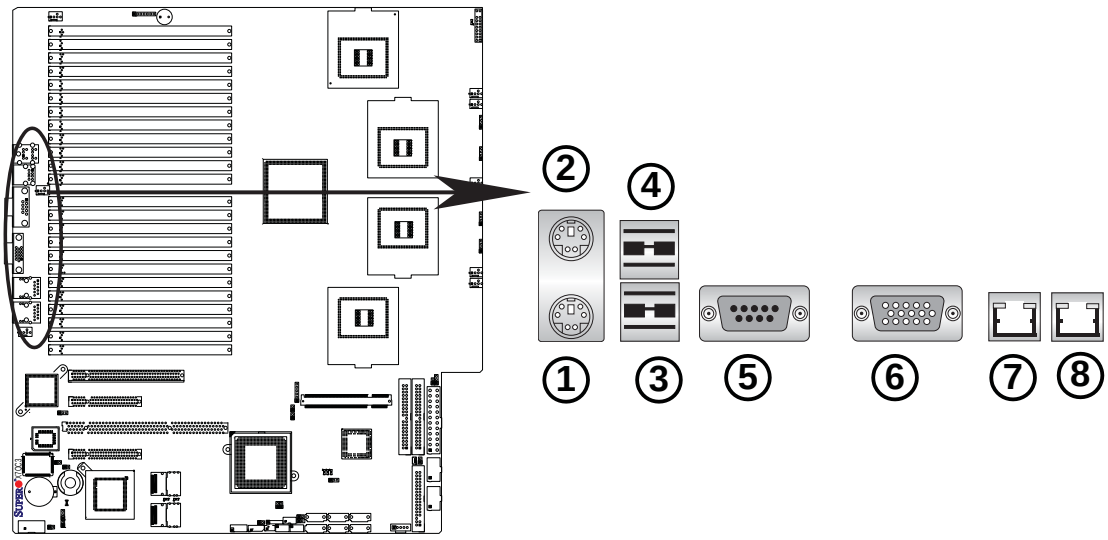
Possible System Memory Allocation & Availability

System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

2-4 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See the figure below for the colors and locations of the various I/O ports.

A. Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

Back Panel Connectors

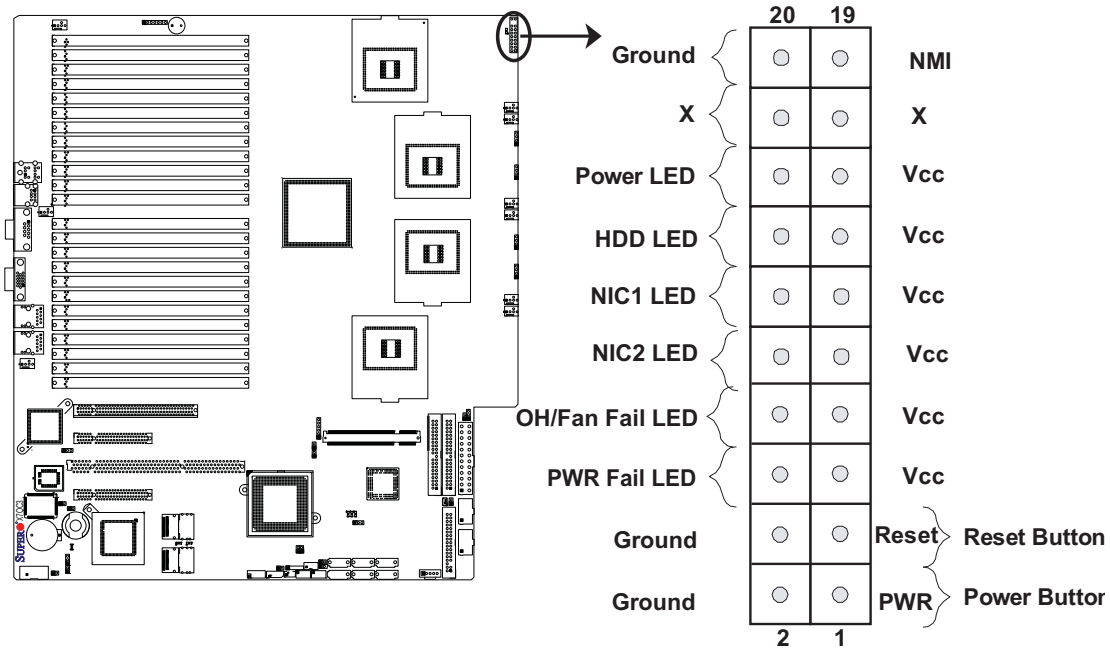
1. Keyboard (Purple)
2. PS/2 Mouse (Green)
3. Back Panel USB Port 0
4. Back Panel USB Port 1
5. COM Port 1 (Turquoise)
6. VGA Port (Blue)
7. Gigabit LAN 1
8. Gigabit LAN 2

(*See Section 2-5 for details.)

B. Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See the figure below for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

JF1 Header Pins



C. Front Control Panel Pin Definitions

NMI Button

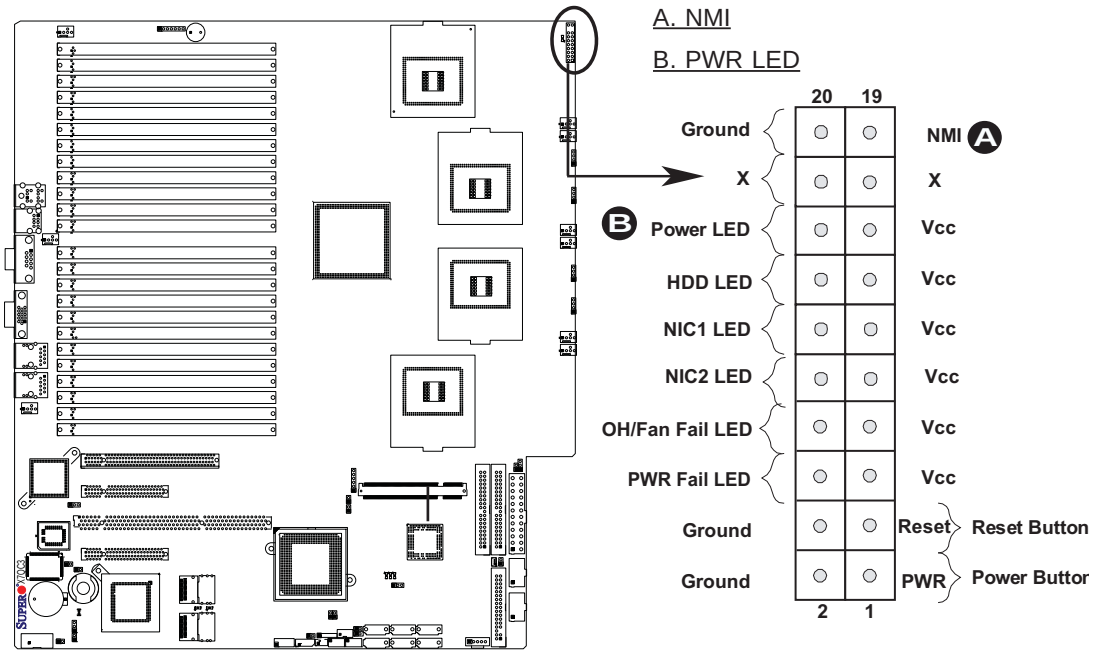
The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+5V
16	Ground



HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activities (for any hard drives on the system, including Serial ATA and IDE). See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)

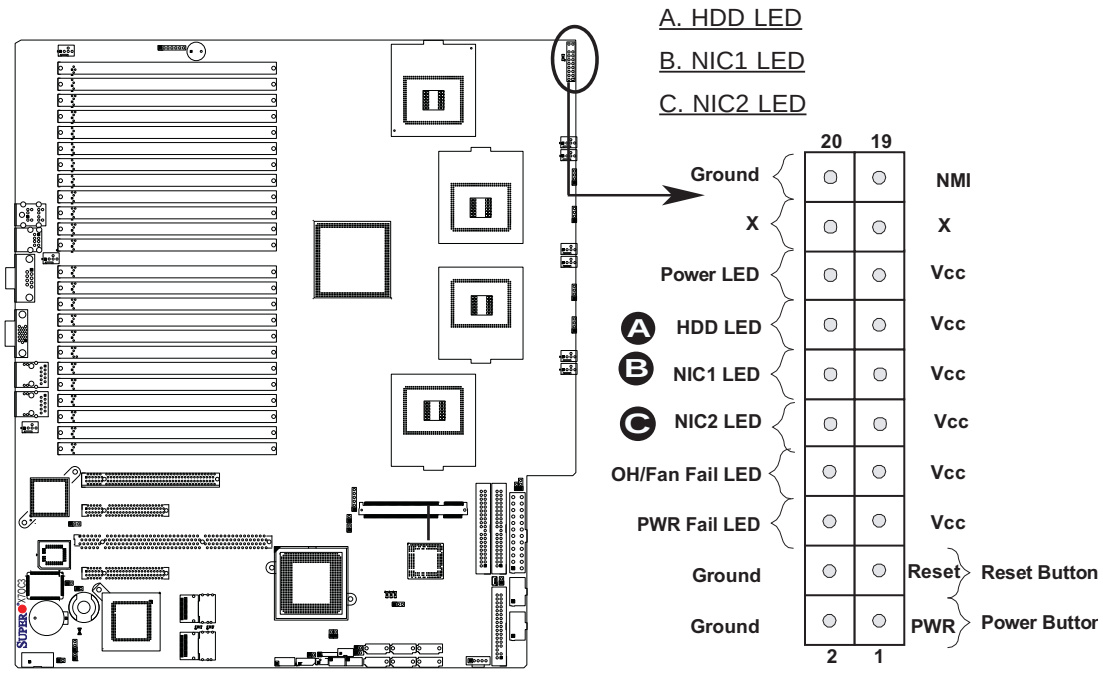
Pin#	Definition
13	+5V
14	HD Active

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1 and the LED connection for GLAN Port2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity status. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)

Pin#	Definition
9/11	Vcc
10/12	Ground



Overheat/Fan Fail LED (OH)

Connect an LED cable to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

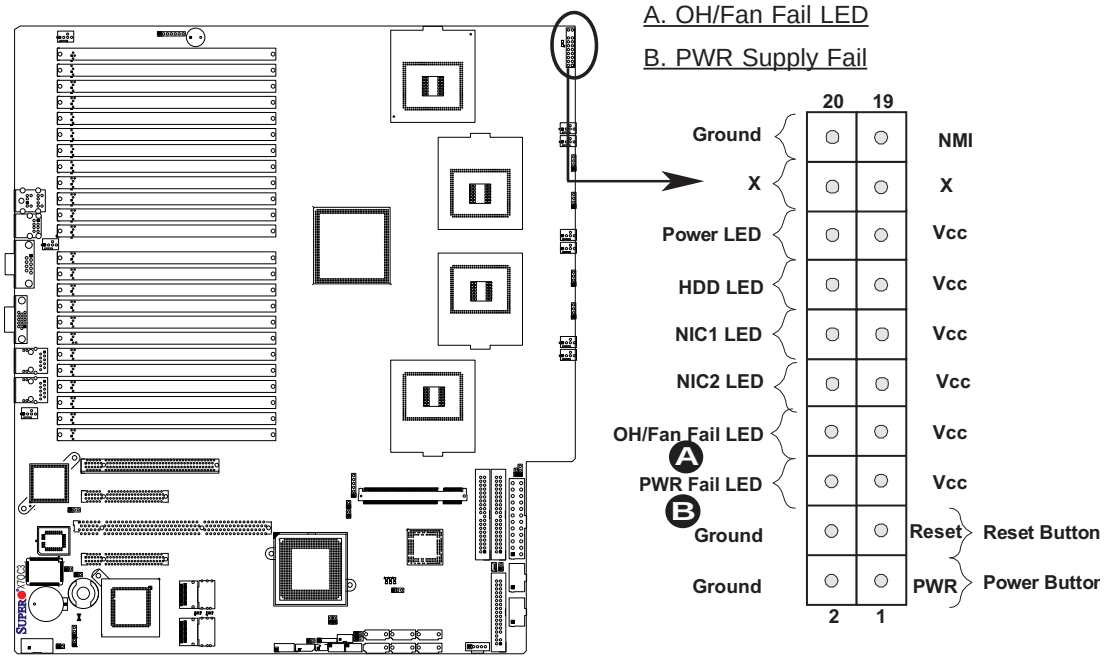
OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Ground



Reset Button

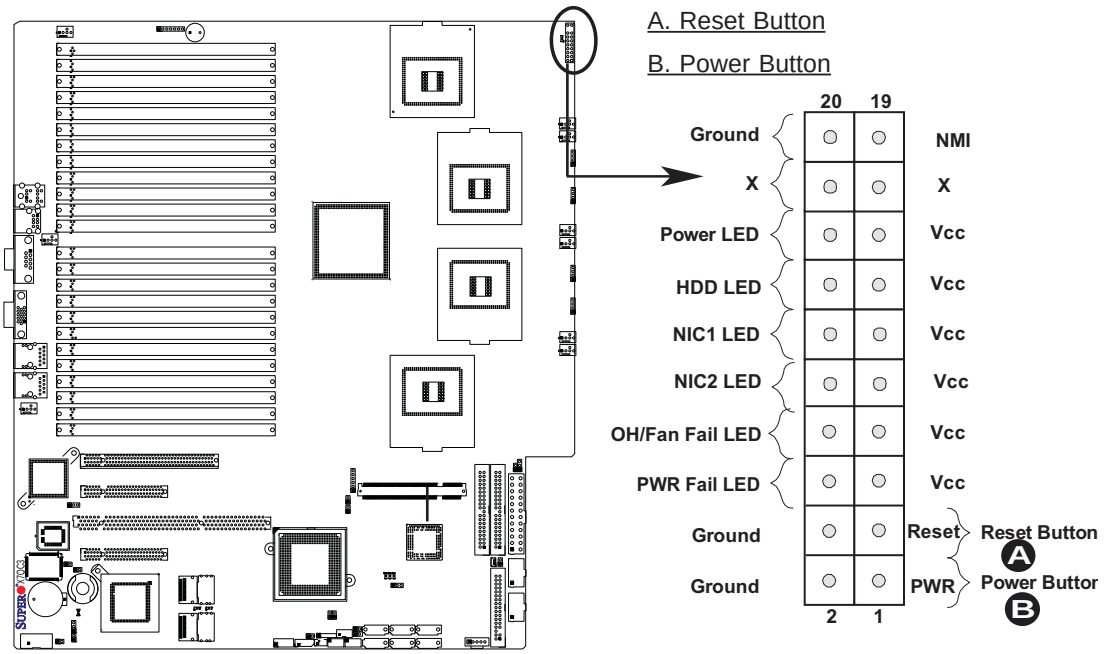
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	+3V Standby



2-5 Connecting Cables

ATX Main Power Connector

There are a 24-pin main power supply connector(JPW1) and two 8-pin CPU PWR connectors (JPW2/JPW3) on the motherboard. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions. For the 8-pin PWR Connectors (JPW2/JPW3), please refer to the item listed below.

ATX Main Power Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

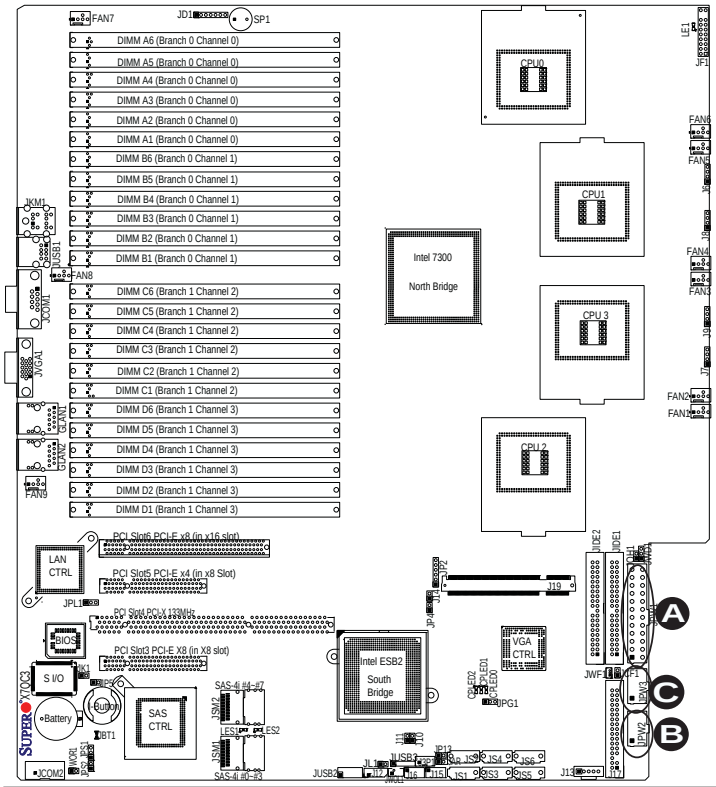
Processor Power Connector

In addition to the Primary ATX power connector (above), The 12V 8-pin CPU PWR connectors located at JPW2 and JPW3 must also be connected to your motherboard. See the table on the right for pin definitions.

12V 8-pin CPU Power Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection



A. 24-pin ATX PWR

B. 8-pin CPU PWR (JPW2)

C. 8-pin CPU PWR (JPW3)

Universal Serial Bus (USB)

There are five USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. USB Ports 0/1 (JUSB1) are located on the I/O Back Panel. USB 2/3 (JUSB2) and USB 4 (JUSB3) can be accessed from the front panel. See the tables on the right for pin definitions.

Back Panel USB (USB0/1)

Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Front Panel USB Pin Definitions

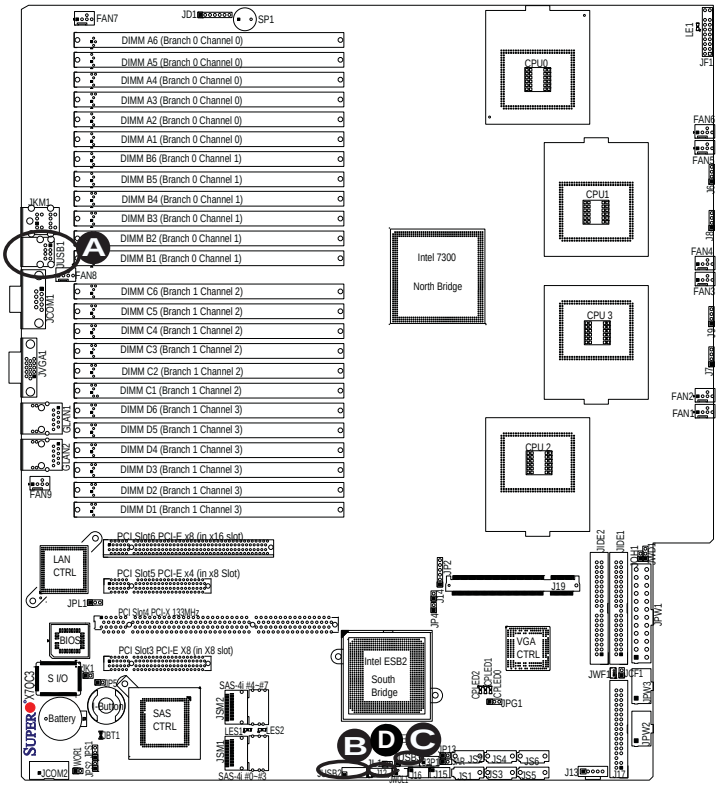
USB2/USB4 Pin #	Definition	USB3 Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions

Pin#	Definition
1	Intrusion Input
2	Ground



A. Backpanel USB 0/1

B/D. Front Panel USB 2/3

C. Chassis Intrusion

Fan Headers

The X7QC3/X7QCE has nine CPU/chassis/ system fan headers (Fan1 to Fan9). All these fans are 4-pin fans. However, Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans. See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) under the Advanced Section in the BIOS. The default setting is Disabled. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans on the motherboard.

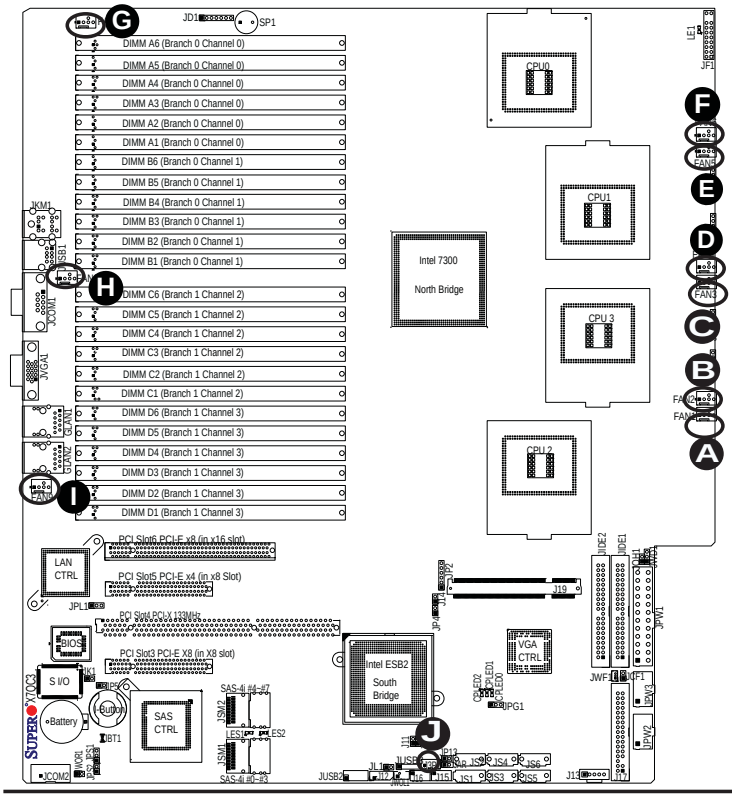
Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

Power Fault (Power Supply Failure)

Connect a cable from your power supply to the Power Fault Header (J3P1) to provide a warning of power supply failure. This warning signal is passed through the PWR_LED pin to indicate a power failure on the chassis. See the table on the right for pin definitions.

PWR Supply Fail LED Pin Definitions	
Pin#	Definition
1	PWR 1: Fail
2	PWR 2: Fail
3	PWR 3: Fail
4	Signal: Alarm Reset

Note: This feature is only available when using Supermicro redundant power supplies.



A. Fan 1
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan 5
F. Fan 6
G. Fan 7
H. Fan 8
I. Fan 9
J. PWR Fault

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located at JKM1. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

PS/2 Keyboard and Mouse Port Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

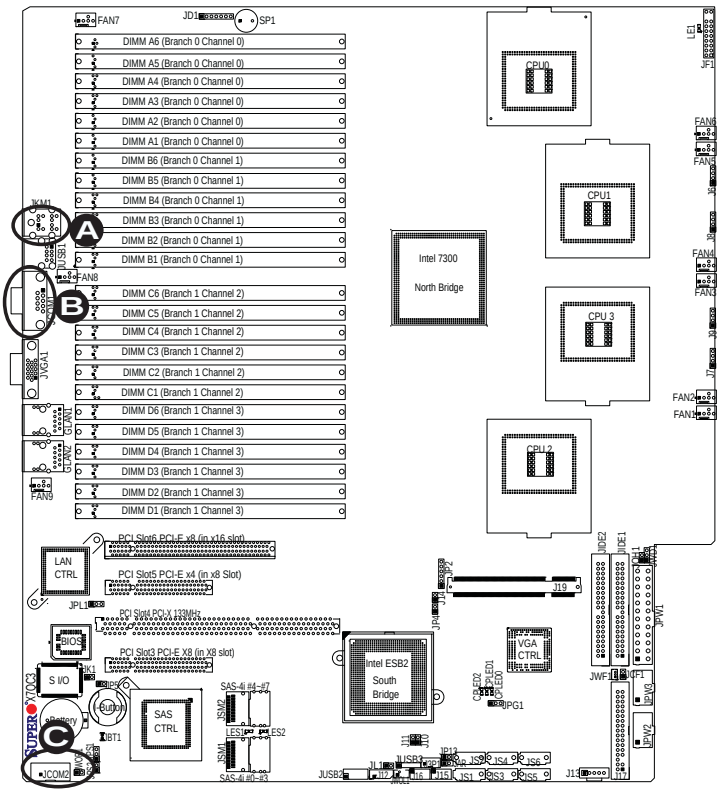
Serial Ports

COM1 is a connector located on the IO Backpanel and COM2 is a header located at JCOM2. See the table on the right for pin definitions.

Serial Port Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

(Pin 10 is available on COM2 only. NC: No Connection.)



A. Keyboard/Mouse

B. COM1

C. COM2

Wake-On-Ring

The Wake-On-Ring header is designated JWOR1. This function allows your computer to receive and be "awakened" by an incoming call to the modem when the system is in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-On-Ring Pin Definitions

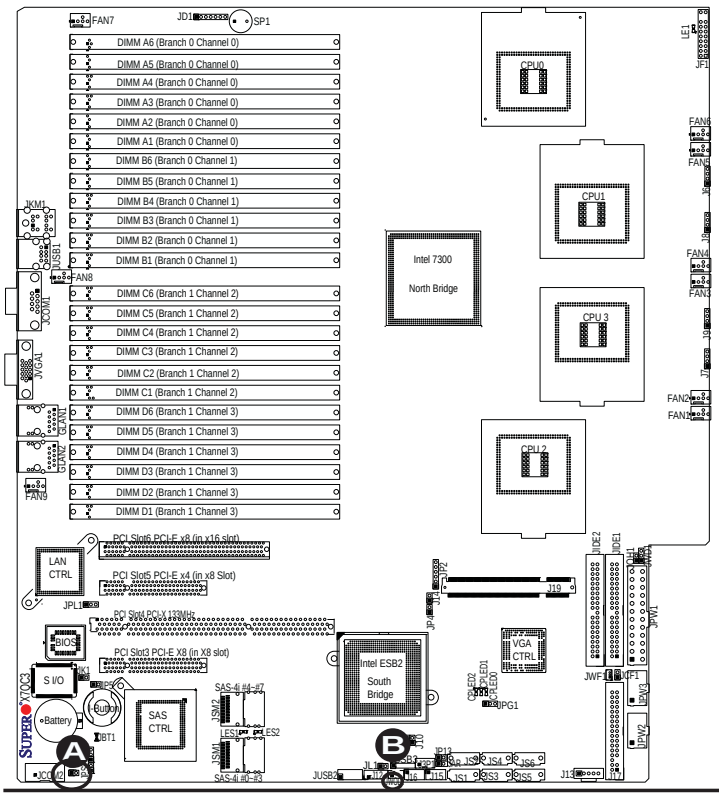
Pin#	Definition
1	Ground
2	Wake-up

Wake-On-LAN

The Wake-On-LAN header is located at JWOL1 on the motherboard. See the table on the right for pin definitions. (You must have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up



A. WOR

B. WOL

GLAN 1/2 (Gigabit Ethernet Ports)

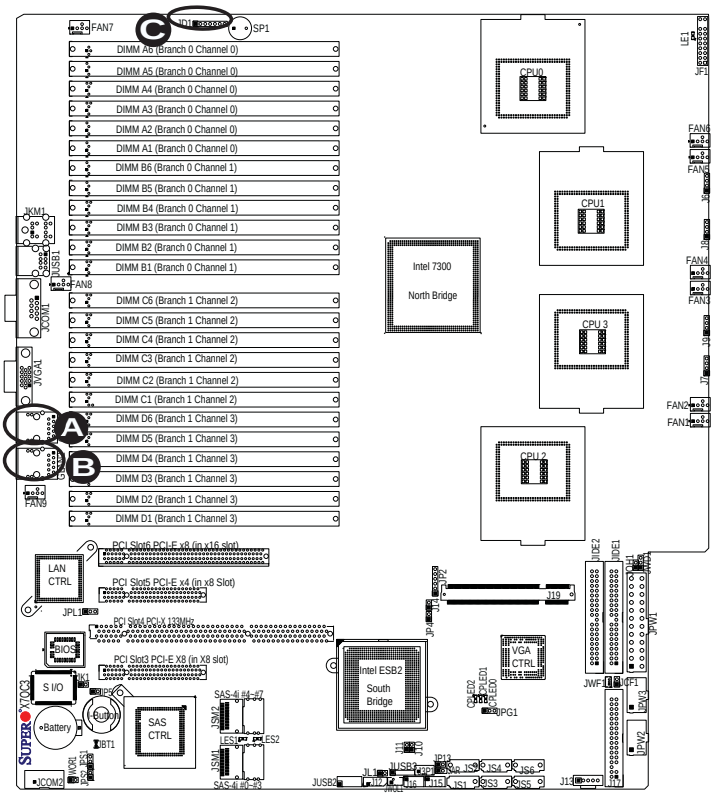
Two G-bit Ethernet ports: GLAN1 (JLAN1) and GLAN2 (JLAN2) are located on the I/O backplane. These ports accept RJ45 type cables.

GLAN1 GLAN2

Power LED/Speaker

On JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker. Close pins 4-7 with a jumper to use an external speaker. If you wish to use the onboard speaker, please close pins 6-7. See the table on the right for speaker pin definitions.

Speaker Connector	
Pin Setting	Definition
Pins 6-7	Internal Speaker
Pins 4-7	External Speaker



A. GLAN1

B. GLAN2

C. PWR LED/Speaker

SGPIO Header

The SGPIO (Serial General Purpose Input/Output) headers are located at J15/J16 on the motherboard. These headers are used to "talk to" a system-monitoring chip on the backplane. See the table on the right for pin definitions. Refer to the board layout below for the location of the header.

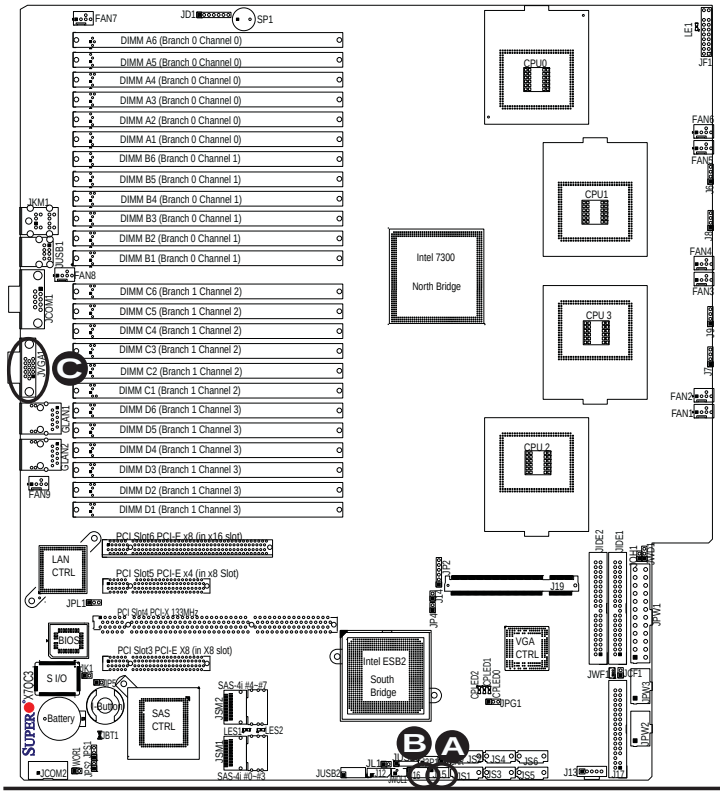
SGPIO Header
Pin Definitions

Pin#	Definition	Pin	Definition
1	*NC	2	*NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	*NC

Note: NC= No Connections

VGA Connector

A VGA connector (JVGA1) is located next to the COM1 port on the IO backplane. Refer to the board layout below for the location.



A. SGPIO (J15)
B. SGPIO (J16)
C. VGA

Alarm Reset

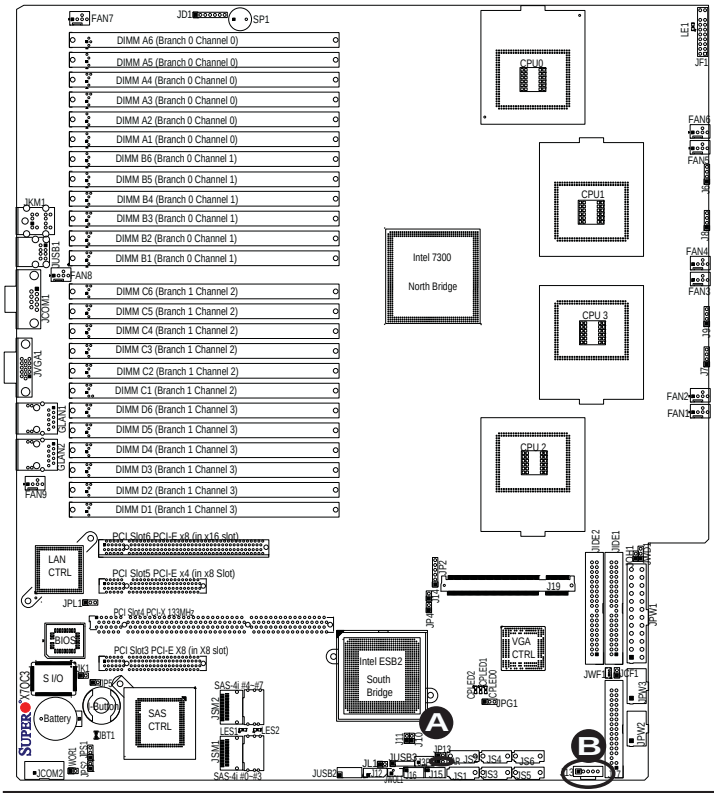
If three power supplies are installed, the system will notify you when any of the three power modules fail. Connect JAR to a micro-switch to turn off the alarm that is activated when a power module fails. See the table on the right for pin definitions.

Alarm Reset Pin Definitions	
Pin Setting	Definition
Pin 1	Ground
Pin 2	+5V

Power SMB (I²C) Connector

Power SMB (I²C) Connector, located at J13, monitors the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR SMB Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail (Input from PS to MB)
4	Ground
5	+3.3V



A. Alarm Reset

B. PWR SMB

Overheat LED/Fan Failure

The JOH1 header is used to connect an LED to provide warning of chassis overheating. This LED will blink to indicate a fan failure. Refer to the table on right for pin definitions.

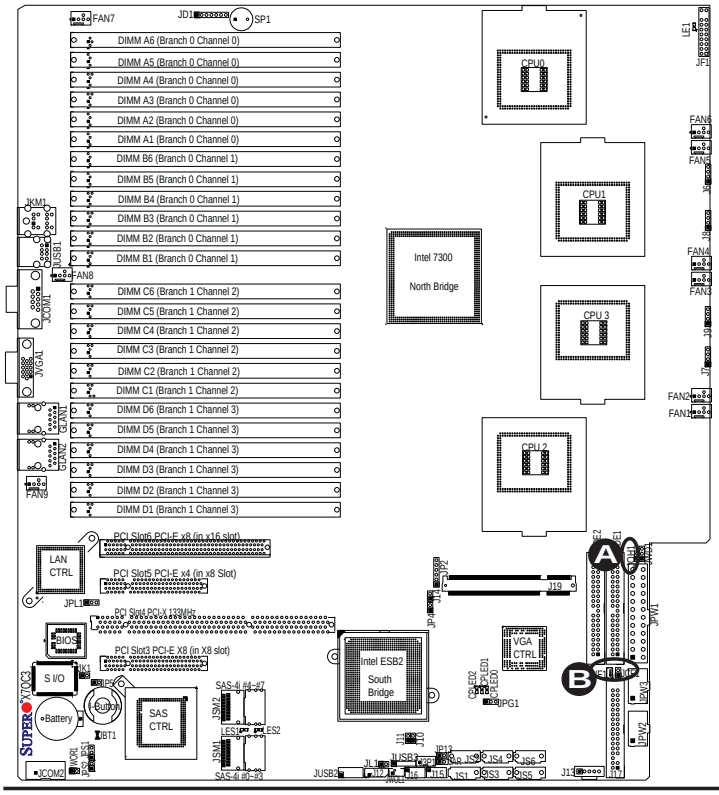
Overheat LED Pin Definitions	
Pin#	Definition
1	5vDC
2	OH Active

OH/Fan Fail LED	
State	Message
Solid	Overheat
Blinking	Fan Fail

Compact Flash Card PWR Connector

A Compact Flash Card Power Connector is located at JWF1. For the Compact Flash Card to work properly, you will need to configure the Jumper-JCF1 properly and connect a Compact Flash Card power cable to JWF1 first. Refer to the board layout below for the location.

Compact Flash Card PWR Connector	
Jumper	Definition
On	Compact Flash Power On
Off	Compact Flash Power Off



A. Overheat/Fan Fail LED

B. Compact Flash PWR

Keylock

The keyboard lock connection is designated JK1. Utilizing this header allows you to inhibit any actions made on the keyboard, effectively "locking" it.

Keylock Pin Definitions

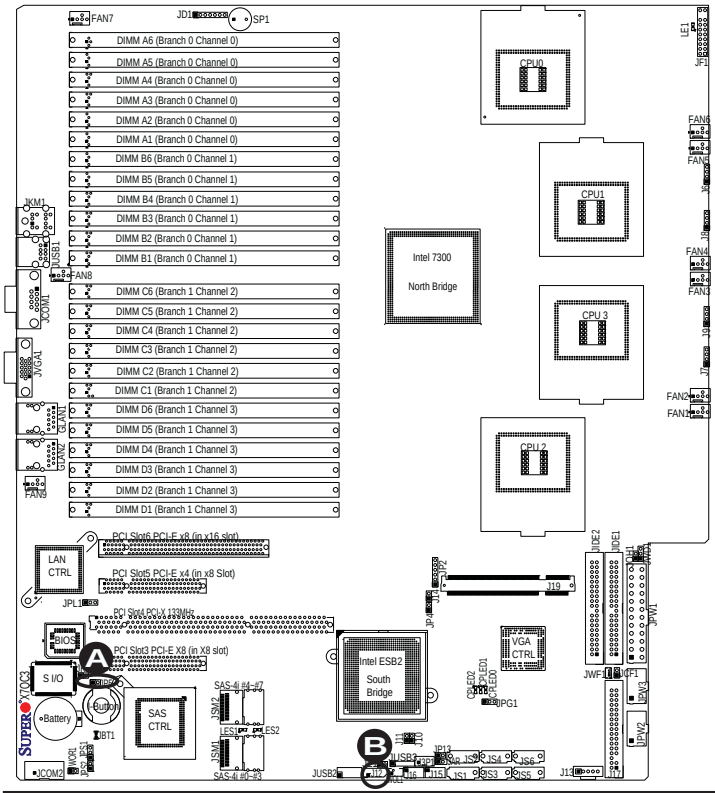
Pin#	Definition
1	Ground
2	Keylock R-N

IPMB Header

The IPMB Header of IPMI is designated J12. See the table on right for pin definitions.

IPMB Pin Definitions

Pin#	Definition
1	SDATA
2	GND
3	SCLK
4	NC



A. Keylock

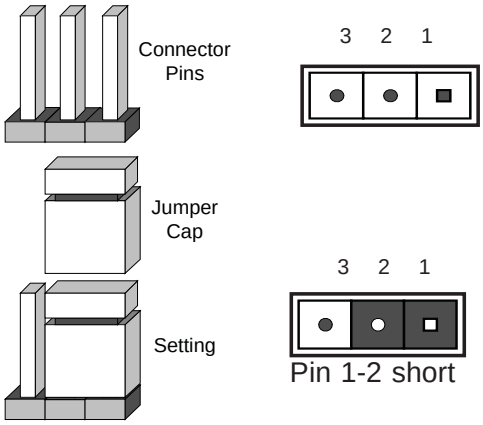
B. IPMB Header

2-6 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

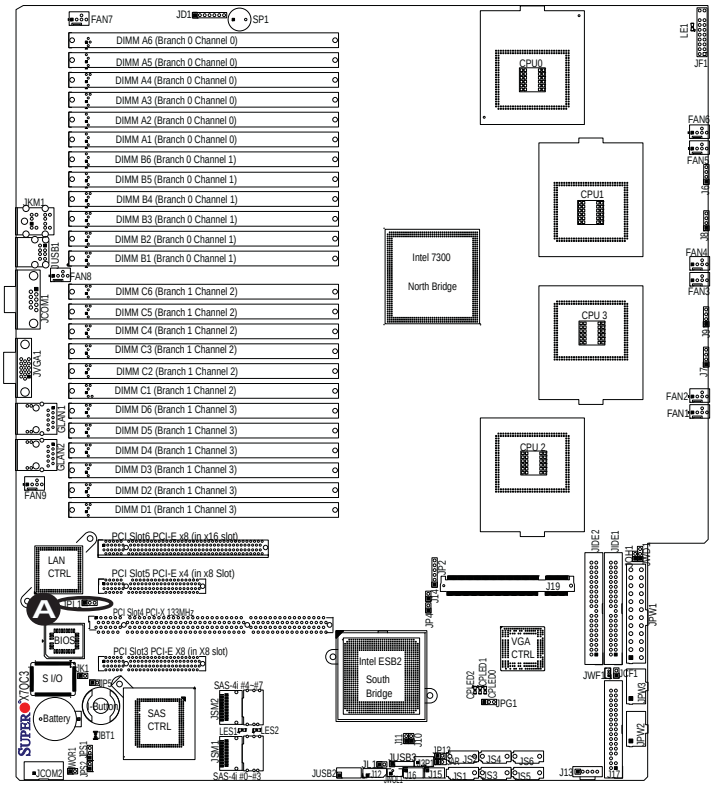
Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



GLAN Enable/Disable

JPL1 enables or disables the GLAN Port1/GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

GLAN Enable	
Pin#	Definition
1-2	Enabled (*default)
2-3	Disabled



A. GLAN Port1 Enable

CMOS Clear

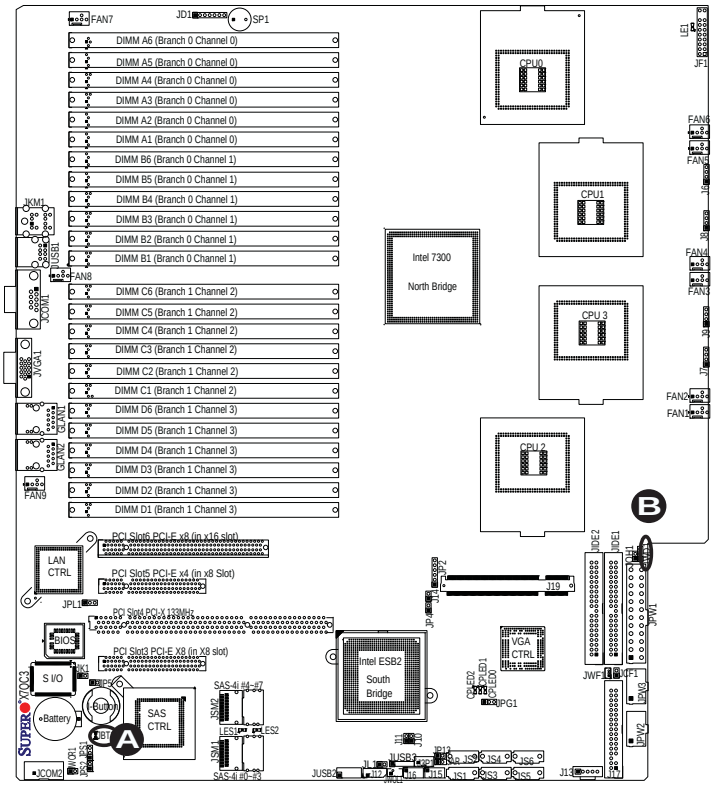
JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (*default)
Pins 2-3	NMI
Open	Disabled



A. Clear CMOS

B. Watch Dog Enable

VGA Enable/Disable

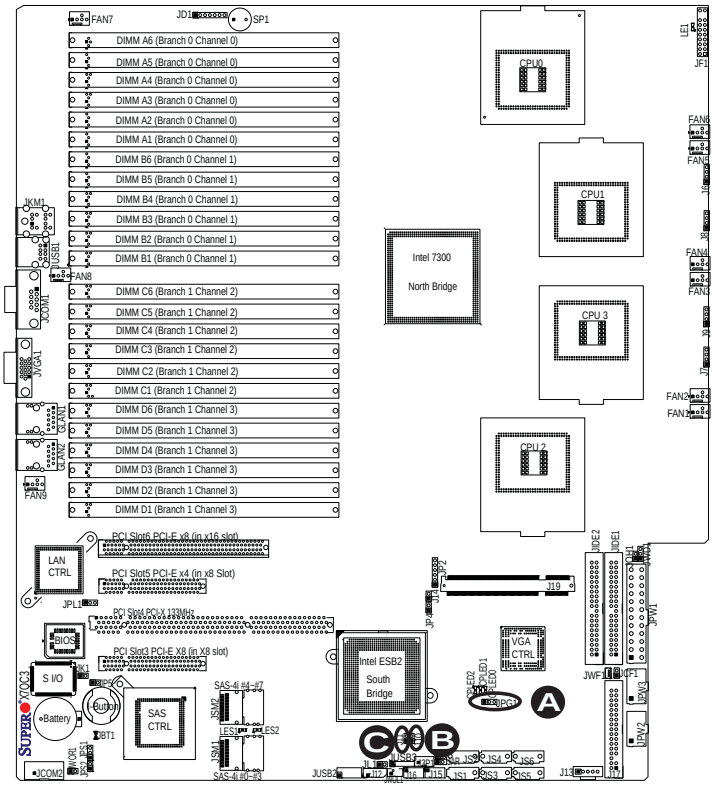
JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings	
Both Jumpers	Definition
Pins 1-2	Enabled (*Default)
Pins 2-3	Disabled

I²C Bus to PCI-X/PCI-Exp. Slots

Jumpers J10 and J11 allow you to connect the System Management Bus (I^2C) to PCI-X/PCI-E slots (Slots 3/4/5/6). If set to open, both jumpers need to be set to open to disable this function and vice versa. The default setting is Open (Disabled.) See the table on the right for jumper settings.

I^2C to PCI-X/PCI-Exp Jumper Settings		
Jumper Setting	Definition	
J10: Closed	J11:Closed	Enabled
J10: Open	J11: Open	Disabled (*Default)



A. VGA Enabled

B. J10

C. J11

Onboard SAS Enable/ MegaRAID Enable

JPS1 allows you to enable the onboard SAS Connections. However, JPS2 is used to enable MegaRAID configuration. See the table on the right for jumper settings. (*SAS is available on the X7QC3 only.)

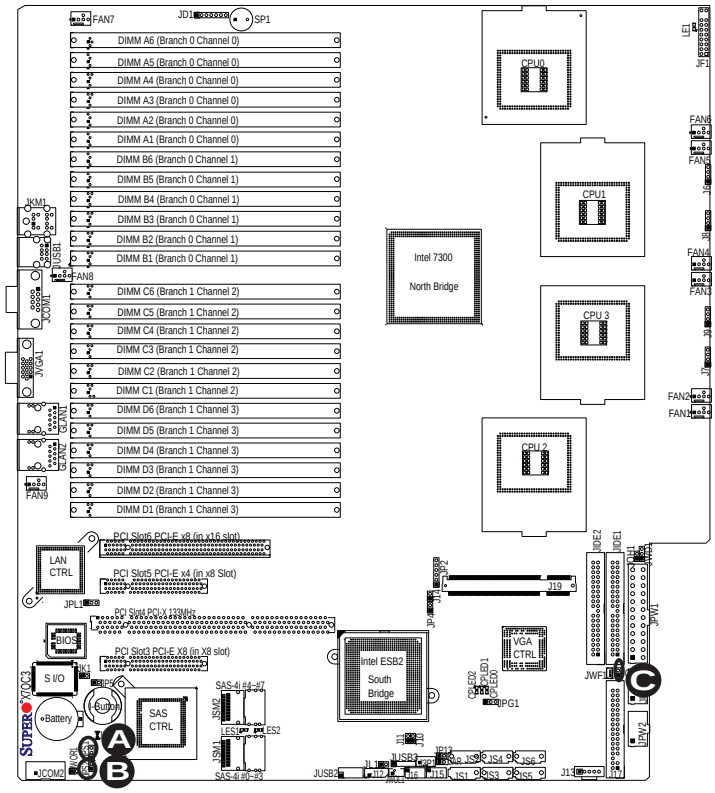
Onboard SAS Enable Jumper Settings (JPS1)	
Both Jumpers	Definition
Pins 1-2	SATA Enabled (*Default)
Pins 2-3	SAS Enabled

Mega_RAID Enable Jumper Settings (JPS2)	
Jumper Setting	Definition
Closed	MegaRAID (*Default)
Open	SAS Integrated RAID

Compact Flash Master/Slave Select

A Compact Flash Master (Primary)/Slave (Secondary) Select Jumper is located at JCF1. Close this jumper to enable Compact Flash Card. For the Compact Flash Card or the Compact Flash Jumper (JCF1) to work properly, you will need to connect the Compact Flash Card power cable to JWF1 first. Refer to the board layout below for the location.

Compact Flash Card Master/ Slave Select	
Jumper	Definition
Open	Slave (Secondary)
Closed	Master (Primary)



A. JPS1

B. JPS2

C. JCF1

CPU Power Select

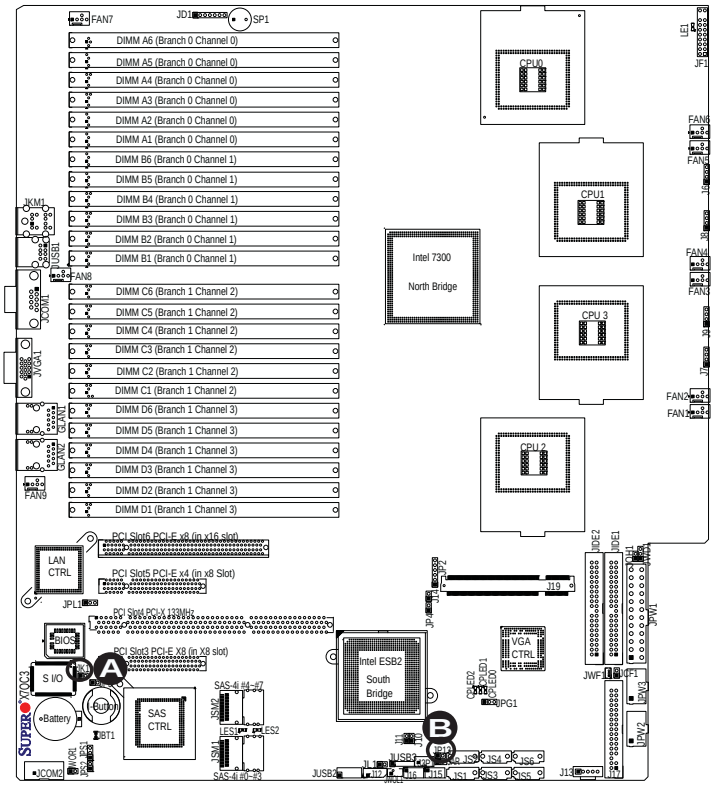
JP5 allows you to select CPU power settings. The default position is "Open" to support 150 W for 2U systems. See the table on the right for jumper settings.

CPU PWR Select Jumper Settings	
Jumper Setting	Definition
Open	130W for 2U Platform (*Default)
Closed	90W for 1U Platform

3rd PWR Supply PWR Fault Detect

The system can notify you in the event of a power supply failure. This feature is available when three power supply units are installed in the chassis with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with JP13 to prevent false alarms.

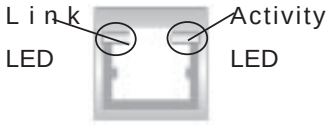
3rd PWR Supply PWR Fault Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (*Default)



A. CPU PWR Select

B. 3rd PWR PWR Fault

2-7 Onboard Indicators



(Rear View: When viewing from the rear side of the chassis.)

GLAN LEDs

There are two GLAN ports on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the other LED may be green, orange or off to indicate the speed of the connection. See the tables at right for more information.

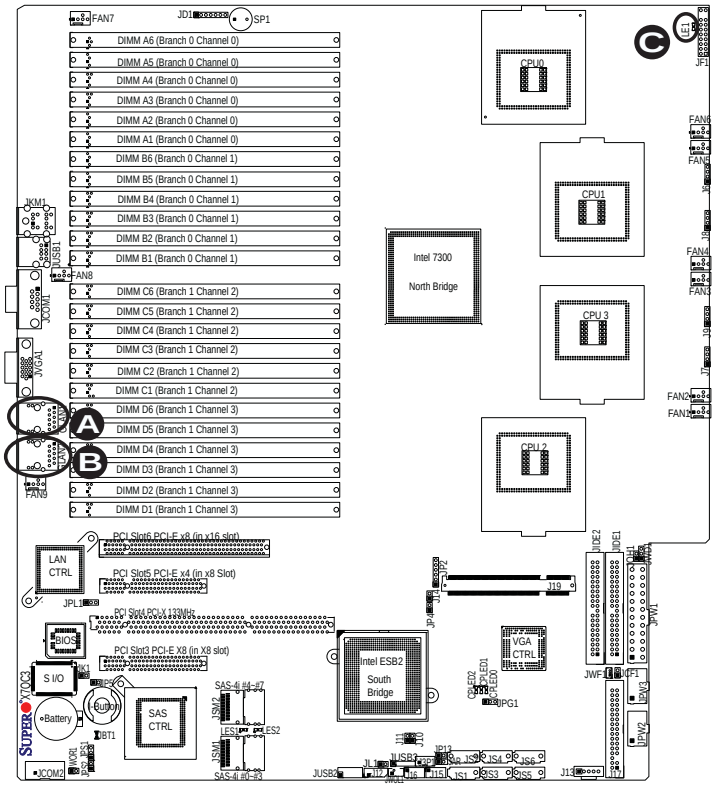
GLAN Activity Indicator		
Color	Status	Definition
Yellow	Flashing	Active

GLAN Link Indicator	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

Onboard Power LED (LE1)

An Onboard Power LED is located at LE1 on the motherboard. When this LED Indicator is on, the system is on. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator (LE1)	
LED Color	Definition
Off	System Off (*PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State
Green: Flashing Slowly	ACPI S3 (STR) State



A. GLAN Port1 LEDs

B. GLAN Port2 LEDs

C. Onboard PWR LED

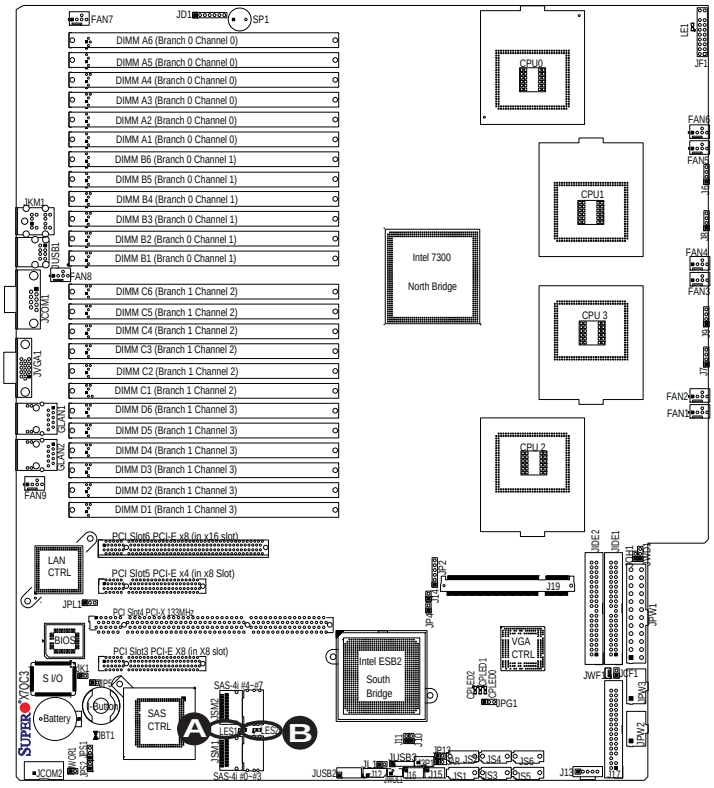
SAS Activity LED

LES1 is used to indicate the status of SAS activity. See the layout below for the LED location. (*SAS is for the X7QC3 only.)

SAS Activity LED Indicator	
LED Color	Definition
On	SAS: Active
Off	SAS: Not Active

SAS Heartbeat LED

SAS Heartbeat LED is located at LES2. See the layout below for the LED location. (*SAS is for the X7QC3 only.)



A. LES1: SAS Act. LED

B. LES2: SAS Heartbeat LED

2-8 Floppy Drive and Hard Disk Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.

Floppy Connector

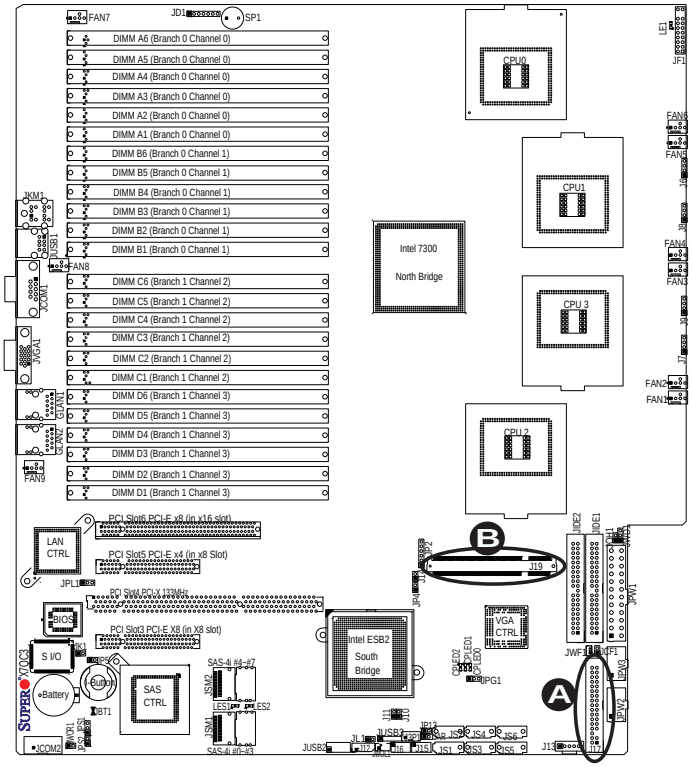
The floppy connector is located at J17. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

SIMSO Slot

A SIMSO Slot is located at J19 on the motherboard. Refer to the layout below for the SIMSO Slot location.



A. Floppy

B. SIMSO

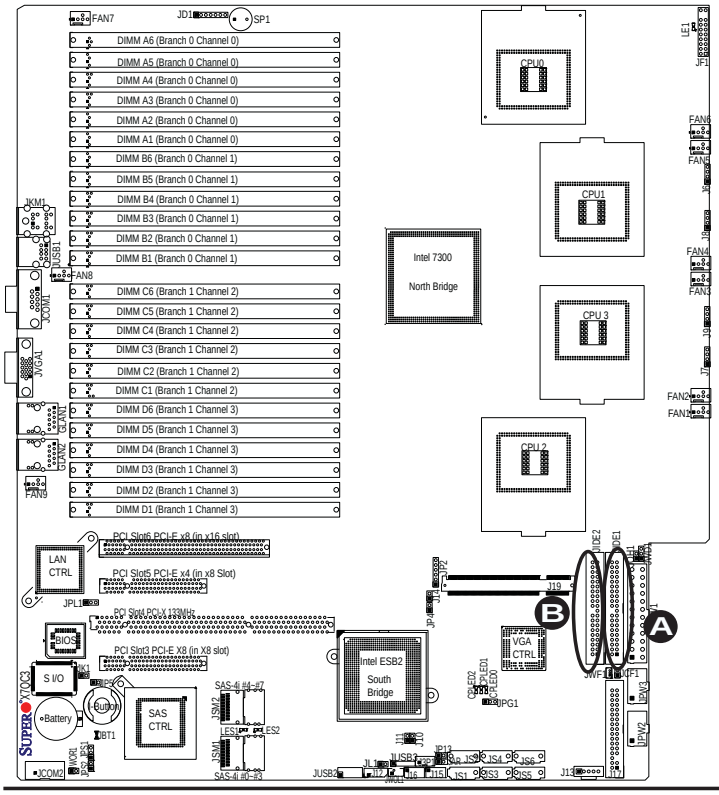
IDE Connectors

There are two IDE Connectors (JIDE1: Blue, JIDE2: White) on the motherboard. The blue IDE connector (JIDE1) is designated as the Primary IDE Drive. The white IDE connector (JIDE2) is designated as the Secondary IDE Drive, reserved for Compact Flash Card use only. (See the note below.) See the table on the right for pin definitions.

Note: JIDE2 (the white slot) is reserved for Compact Flash Card only. Do not use it for other devices. If JIDE2 is populated with a Compact Flash Card, JIDE1 (the blue slot) will be available for one device only. For the Compact Flash Card to work properly, you will need to connect a power cable to JWF1 first.

IDE Drive Connectors
Pin Definitions

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground



A. IDE#1

B. IDE#2

Notes

Chapter 3
Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. **Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

Before Power On

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install a CPU in the CPU Socket and connect the chassis speaker and the power LED to the motherboard. (Make sure that the CPU is properly seated. Be sure to check all jumper settings as well.)

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Make sure that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to the Appendix B for details on beep codes.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to make sure that it still

supplies ~3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. Determine if DIMMs of different speeds or types have been installed and make sure that the BIOS setup is configured for the fastest speed of RAM used. It is recommended that you use DIMM modules of the same type and same speed on a motherboard.
3. Make sure that you are using the correct type of DDR2 Fully Buffered (FBD) ECC 533/667 SDRAM (*recommended by the manufacturer.)
4. Check for bad DIMM modules or slots by swapping a single module between four slots and noting the results.
5. Make sure all memory modules are fully seated in their slots. As an interleaved memory scheme is used, you must install two modules at a time, beginning with Bank 0, then Bank 1, and so on (see Section 2-3).
6. Check the position of the 115V/230V switch on the power supply.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/support/faqs/) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our web site at (http://www.supermicro.com/support/bios/)
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
   - Motherboard model and PCB revision number
   - BIOS release date/version (this can be seen on the initial display when your system first boots up)

•System configuration

An example of a Technical Support form is on our web site at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com or by fax at (408) 503-8000, option 2.

3-3 Frequently Asked Questions

Question: What are the various types of memory that my motherboard can support?

Answer: The X7QC3/X7QCE has 24 240-pin DIMM slots that support DDR2 FBD ECC 533/667 SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes. (See Chapter 2 for detailed Information.)

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable USB device. Run the batch file using the format flash.bat filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

(***Warning**: Do not shut down or reset the system while updating BIOS to prevent possible system boot failure!)

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows and security and audio drivers.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your

vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, You can also request a RMA authorization online (http://www.supermicro.com/support/rma/).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4
BIOS

4-1 Introduction

This chapter describes the AMIBIOS Setup Utility for the X7QC3/X7QCE. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated using a floppy disk-based program. This chapter describes the basic navigation of the AMIBIOS Setup Utility setup screens.

Starting BIOS Setup Utility

To enter the AMIBIOS Setup Utility screens, hit the <Delete> key while the system is booting up. (**Note**: In most cases, the <Delete> key is used to invoke the AMIBIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.)

Each main BIOS menu option is described in this user's guide. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMIBIOS Setup Utility has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMIBIOS Setup Utility uses a key-based navigation system called hot keys. Most of the AMIBIOS Setup Utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc. (**Note**: Options printed in **Bold** are default settings.)

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMIBIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

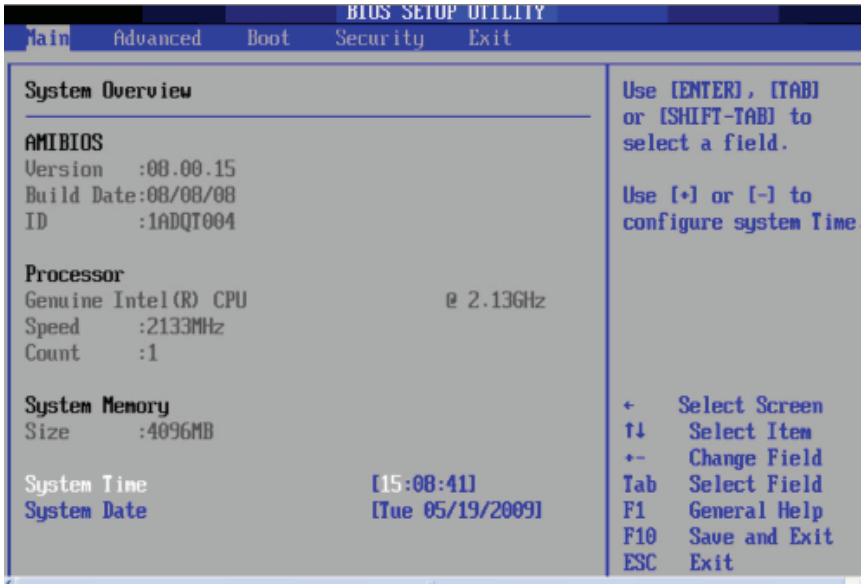
Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMIBIOS Setup Utility. From the main menu, you can access the other setup screens. An AMIBIOS identification string is displayed at the bottom left corner of the screen, below the copyright message.

Warning!! Do not shut down or reset the system while updating the BIOS to prevent possible boot failure.

4-2 Main Setup

When you first enter the AMIBIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the ***Main*** tab at the top of the screen. The Main BIOS Setup screen is shown below.



When you select the Main Setup, the following items will be automatically displayed:

System Overview: The following BIOS information will be displayed:

AMIBIOS

Version/Build Date/ID

Processors

When you select this option, the AMIBIOS Setup Utility will automatically display the status of processors as shown below.

Type/Speed/Count

System Memory

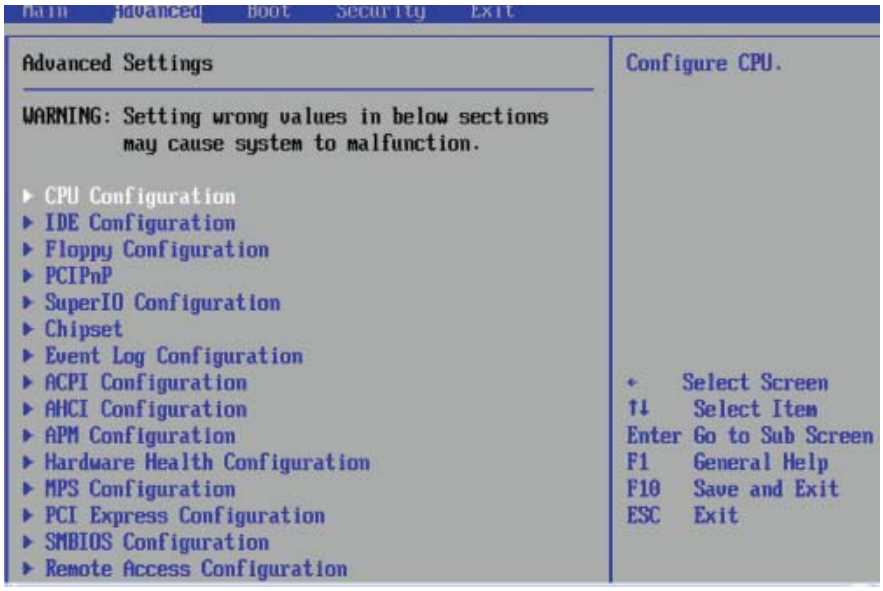
This option allows the AMIBIOS Setup Utility to display the status of memory modules installed in the system.

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in DAY/MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30P.M. as 17:30:00.)

4-3 Advanced Settings

The Advanced Settings screen and submenus are listed below:



Warning

When you first enter the Advanced Setup screen, the Setup Warning will be displayed. Please follow the instruction and set the correct value for each item to ensure proper system setup.

▶CPU Configuration Submenu

Configure Advanced CPU Settings

This feature displays the settings of the processor(s) installed in the system.

Ratio CMOS Setting (*Available when SpeedStep is disabled.)

This option allows the user to set the ratio between the CPU Core Clock and the FSB frequency. The default setting is **Auto**.

Hardware Prefetcher (*****Available when supported by the OS and the CPU.)

If set to **Enabled**, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (*****Available when supported by the OS and the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are Disabled and **Enabled**.

Intel <R> Virtualization Technology (*Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Execute-Disable Bit Capability (*****Available when supported by the OS and the CPU.)

Set to **Enabled** to enable the Execute Disable Bit feature to allow the processor to classify areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from creating a flood of codes to overwhelm the processor or damage the system during an attack. **Note**: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

Intel (R) SpeedStep (tm) Technology (*Available when supported by the CPU.)

The Enhanced Intel SpeedStep Technology allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. Select Enabled to allow the CPU speed to be controlled by the OS. Select **Disabled** to allow the CPU speed to be controlled by the user via a CMOS Setting. (**Refer to Intel's web site for detailed information.)**

▶IDE Configuration Submenu

When this submenu is selected, the AMI BIOS automatically displays the following items:

ATA/IDE Configuration

This feature allows the user to configure the ATA/IDE mode. The options are Disabled, Compatible, and **Enhanced**.

Configure SATA As

This feature allows the user to configure the onboard SATA slots as IDE Drives, RAID Drives, or AHCI Drives. The options are **IDE**, RAID Intel, RAID Adaptec, and AHCI.

Primary IDE Channel Master/Slave, Secondary IDE Channel Master/ Slave and Third IDE Channel Master/Slave

These settings allow the user to set the parameters of Primary IDE Channel Master/Slave, Secondary IDE Channel Master/Slave and Third IDE Channel Master/Slave slots. Hit <Enter> to activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are the following:

Type

This feature allows the user to select the type of device connected to the system. The options are Not Installed, **Auto**, CDROM, and ARMD.

LBA/Large Mode

Logical Block Addressing (LBA) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

This feature allows the user to use the Block Mode to boost the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if the Block Mode is not used. If the Block Mode is used, data will be transferred of up to 64 KB per interrupt. If set to Disabled, data will be transferred from and to the device one sector at a time. If set to Auto, data will be transferred from and to the device multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined. Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs. Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs. Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs. Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs. Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

DMA Mode

Select **Auto** to allow the BIOS to automatically detect the DMA mode. Use this value if the IDE disk drive support cannot be determined. Select SWDMA0 to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MBs. Select SWDMA1 to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MBs. Select SWDMA2 to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MBs. Select MWDMA0 to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MBs. Select MWDMA1 to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MBs. Select MWDMA2 to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MBs. Select UDMA0 to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MBs. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2. Select UDMA1 to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MBs. Select UDMA2 to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MBs. Select UDMA3 to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 66.6 MBs. Select UDMA4 to allow the BIOS to use Ultra DMA mode 4 . It has a data transfer rate of 100 MBs. The options are **Auto**, SWDMAn, MWDMAn, and UDMAn.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMIBIOS Setup Utility to automatically detect hard disk drive support. The options are Disabled, Enabled, and **Auto**.

32-Bit Data Transfer

Select **Enabled** to use the feature of 32-Bit data transfer. Select "Disabled" to disable this function. The options are **Enabled** and Disabled.

Hard Disk Write Protect

Select Enabled to use the feature of Hard Disk Write Protect to prevent data from being written to HDD. The options are Enabled or **Disabled**.

IDE Detect Time Out

This feature allows the user to set the system time-out value to allow the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, Mode 1.0, 15, 20, 25, 30, and **35**.

ATA(PI) 80Pin Cable Detection

This feature allows the AMI BIOS to automatically detect 80Pin ATA(PI) Cable. The options are **Host & Device**, Host, and Device.

▶Floppy Configuration

This option allows the user to configure the settings for the Floppy Drives installed in the system.

Floppy A/Floppy B

Move the cursor to these fields via the up and down arrow keys to select the floppy type. The options are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3½", 1.44 MB 3½", and 2.88 MB 3½". The default settings for Floppy A is 1.44 MB 3½" and for Floppy B is **Disabled**.

▶PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

Clear NVRAM

Select Yes to clear NVRAM during system boot. The options are Yes and **No.**

Plug & Play OS

Select Yes to allow the OS to configure Plug & Play devices. (*This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select **64** to set the PCI latency to 64 PCI clock cycles. The default setting is **64**.

Allocate IRQ to PCI VGA

Select Yes to allow the system to give the VGA adapter card an interrupt address. The options are **Yes** and No.

Palette Snooping

Select Enabled to inform the onboard PCI devices that an ISA graphics device is installed in the system in order for the graphics card to function properly. The options are Enabled and **Disabled**.

PCI IDE BusMaster

Select Enabled to allow the BIOS to use the PCI busmaster to read from and write to the onboard IDE drives. The options are **Enabled** and Disabled.

Offboard PCI/ISA IDE Card

This option allows the user to assign a PCI slot number to an off-board PCI/ISA IDE card in order for it to function properly. The options are **Auto**, PCI Slot1, PCI Slot2, PCI Slot3, PCI Slot4, PCI Slot5, and PCI Slot6.

IRQ3/IRQ4/IRQ5/IRQ7/IRQ9/IRQ10/IRQ11/IRQ14/IRQ15

This feature specifies the availability of an IRQ to be used by a PCI, PnP device. Select Reserved for an IRQ to be used by a Legacy ISA device. The options are **Available** and Reserved.

DMA Channels 0/1/3/5/6/7

Select Available to indicate that a specific DMA channel is available to be used by a PCI/PnP device. Select Reserved if a DMA channel specified is reserved for a Legacy ISA device.

Reserved Memory Size

This feature specifies the size of memory block to be reserved for Legacy ISA devices. The options are **Disabled**, 16K, 32K, 64K.

▶Super IO Configuration

Onboard Floppy Controller

Select Enabled to enable the onboard floppy controller. The options are **Enabled** and Disabled.

Floppy Drive Swap

Select Enabled to allow for floppy drive swap. The default setting is **Disabled.**

Serial Port1 Address/Serial Port2 Address

This option specifies the base I/O port addresses and the Interrupt Request addresses for Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port 1 are Disabled, **3F8/IRQ4**, 3E8/IRQ4, and 2E8/IRQ3. The options for Serial Port 2 are Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3.

Serial Port2 Mode

This option allows the user to configure the Serial Port2 Mode. The Options are **Normal**, IrDA, and Ask IR.

▶Chipset Settings

This item allows the user to configure the Advanced Chipset settings for the system.

▶North Bridge Configuration

This feature allows the user to configure the North Bridge Chipset settings.

Crystal Beach/DMA

This feature uses the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. **Note**: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the ESB 2 South Bridge chip. The options are **Enabled** and Disabled.

MCH (Memory Controller Hub) Branch Mode

This feature allows the user to decide how the two memory branches operate. System address space can either be interleaved between the two branches or sequencing from one branch to another. Mirror mode offers data correction by maintaining two copies of data in two branches. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Branch Interleave**, Branch Sequencing, Branch Mirroring, and Single Channel 0.

Patrol Scrubbing

Scrubbing is a process that allows the North Bridge to correct correctable memory errors found on FBD memory modules. Select Enabled to use Patrol Scrubbing, a background ECC memory correction activity initiated by the North Bridge to find and correct memory errors by scanning all memory modules doing simulated "READs" while checking for ECC errors. When an ECC error is detected during this process, it is logged as a Patrol error. A correctable error is corrected and written back into memory. The options are **Enabled** and Disabled.

Demand Scrubbing

Scrubbing is a process that allows the North Bridge to correct correctable memory errors found on an FBD memory module. When the CPU or I/O issues a demand- read command, and the read data from memory turns out to be a correctable ECC, it is corrected and sent to the original source. Memory is updated as well. Select Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

Branch Dependent Sparing

Select Enabled to use the feature of branch-dependent sparing. The options are Enabled and **Disabled**.

Branch Specific Sparing

Select Enabled to enable the sparing feature for a branch specified. The options are Enabled and **Disabled**.

Branch Interleaving

Select Enable to enable the functions of Memory Interleaving for a branch specified. The options for Memory Interleaving are 1:1, 2:1 and **4:1**.

FBD Throttling Mode

Select Enabled to use the feature of closed-loop thermal throttling on a fully buffered (FBD) memory module. If Enabled, thermal throttling will be activated when the temperature of an FBD module reaches a predefined threshold. The default setting is **Enabled**.

Spread Spectrum Mode

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are **Enabled** and Disabled.

Non-Compliance Mode

Select the Compliance Mode to enable the PCI-Express Compliance Mode. The options are **Non-Compliance** and Compliance.

▶South Bridge Configuration

This feature allows the user to configure the Intel ICH South Bridge settings.

SMBus Controller

Select Enabled to activate the onboard SMBus (System Management Bus) controller. The options are **Enabled** and Disabled.

USB Functions

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are: Disabled, 2 USB ports, 4 USB ports, and **6 USB ports**.

USB2.0 Controller

Select Enabled to activate the onboard USB2.0 controller. The options are **Enabled** and Disabled.

SLP_S4# Minimum Assertion Width

This setting allows the user to select a desired length of time to be used as the SLP_S4# Min. Assertion Width. The options are 4-5 Sec., 3-4 Sec., 2-3 Sec., and **1-2 Sec.**

Restore on AC Power Loss

This setting allows you to decide how the system will react when power returns after an unexpected power loss. The options are Stay Off, Power On, and **Last State**.

PCI-E Port Configuration

Slot#6 PCI-E x4

Select Auto to allow the BIOS to automatically configure PCI-E Slot#5 settings. The options are Disabled and **Auto**.

▶ESB2 PCI-X Hub Configuration

PCI Bus Frequency

This option allows the user to set the maximum PCI speed to be used in the PCI slot specified. Select **Auto** to allow the BIOS to automatically detect the capability of the device installed on the bus. The options for Slot 1 are **Auto**, 33 MHz PCI, 66 MHz PCI, 66 MHz PCI-X, 100 MHz PCI-X, and 133 MHz PCI-X. The options for Slot 2 are **Auto,** 66 MHz PCI, 100 MHz PCI-X, and 133 MHz PCI-X.

I/O Port Decode

This option allows the user to select the decode range for the I/O connections. The options are **4K Decode** and 1K Decode.

RAS Sticky Error Handling

This option allows the user to decide how to handle Sticky RAS errors. The options are **Clear Errors** and Leave Errors (unchanged).

VGA 16-Bit Decode

Select Enabled to enable the function of decoding VGA for the devices installed behind the PXH PCI Controller Hub. The options are **Enabled** and Disabled.

▶Event Log Configuration

Highlight this item and press <Enter> to view the contents of the event log.

View Event Log

This feature allows the user to view all unread events.

Mark All Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear Event Log

This setting will clear all event logs when set to OK. The options are OK and **Cancel**.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

▶APCI Configuration

This item allows the user to enable or disable the ACPI support for the operating system.

▶Advanced ACPI Configuration

Use this feature to configure advanced ACPI options. Select Yes if the operating system supports ACPI. Select No if the operating system does not support ACPI.

ACPI Version Features

Select Yes to allow the RSDP pointers to point to the 64-bit System Description Tables. Select No to deactivate this function. The options are ACPI V.1.0, ACPI V.2.0, and **ACPI V.3.0**.

ACPI APIC Support

Select Enabled to allow the ACPI APIC Table Pointer to be included in the RSDP pointer list. The options are **Enabled** and Disabled.

AMI OEMB Table

Select Enabled to allow the OEMB Table Pointer to be included in the R(x)SDT pointer lists. The options are **Enabled** and Disabled.

Headless Mode

Select Enabled to activate the Headless Operation Mode through the ACPI and allow the BIOS to boot up the system without using other I/O devices. The options are Enabled and **Disabled**.

▶Chipset ACPI Configuration

High Precision Event Time

Select Enabled to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options for this feature are **Enabled** and Disabled.

▶General WHEA Configuration

WHEA Support

Select **Enabled** to enable WHEA (Windows Hardware Error Architecture) support which will improve system memory performance. The options are **Enabled** and Disabled.

▶AHCI Configuration

AHCI Port 0 ~ AHCI Port 5

This feature allows the AMIBIOS Setup Utility to automatically detect the presence of the IDE device installed on the port specified by the user and automatically display the status of the IDE drive as detected by the BIOS.

▶APM Configuration

This feature allows the user to configure the Advanced Power Management settings.

Power Management/APM

Select Enabled to use Advanced Power Management features. The options are **Enabled** and Disabled.

Video Power Down Mode

If set to Suspend, video will go into the Suspend Mode when the system is in the Suspend or Standby Mode. The options are Disabled and **Suspend**.

Hard Disk Power Down Mode

If set to Suspend, the onboard hard disk drives will go into the Suspend Mode when the system is in the Suspend or Standby Mode. The options are Disabled and **Suspend**.

Suspend Time Out

If set to Disabled, the system will not go into the Suspend mode no matter how long it is inactive. If set to 1 Minute, the system will go into the Suspend mode if the system is inactive for more than 1 minute. The options are **Disabled,** I Min., 2 Min., 4 Min., 8 Min., I0 Min., 20 Min., 30 Min., 40 Min., 50 Min.,and 60 Min.

Throttle Slow Clock Ratio

This feature allows the user to set the Duty Cycle Ratio in the Throttling mode. The options are 87.5%, 75%, 62.5%, **50%**, 37.5%, 25%, and 12.5%.

Keyboard and PS/2 Mouse Monitoring

Select Monitor to allow the keyboard and PS/2 Mouse to be monitored regularly. The options are

Ignore and **Monitor**.

Power Button Mode

If set to On/Off, system power will be turned on/off when the user presses the power button. If set to the Suspend Mode, the system will go into the Suspend mode when the user presses the power button. The options are **On/Off** and Suspend.

Advanced Resume Event Control

Resume On Ring

Select Enabled to wake up the system when the modem receives an incoming call. The default setting is **Disabled.**

Resume On PME#

Select Enabled to allow PME to generate a wake event. The options are **Enabled** and Disabled.

Resume On RTC Alarm

Select Enabled to use the Real Time Clock (RTC) to set the timer for the system to wake up. The options are Enabled and **Disabled**.

▶Hardware Health Configuration

This feature allows the AMIBIOS Setup Utility to display the following items:

▶Temperatures

CPU Overheat Temperature

This feature displays the pre-defined CPU Overheat temperature threshold. The options range from 65°C to 90°C. Use the <+> and <-> keys to set the desired setting. The default setting is **78°C**.

The AMIBIOS Setup Utility will automatically monitor and display the following information:

CPU1 Temperature, CPU2 Temperature, CPU3 Temperature, CPU4 Temperature and System Temperature

▶Fan Speed

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If the option is set to 3-pin fan, the fan speed is controlled by voltage. If the option is set to 4-pin, the fan speed will be controlled by Pulse Width Modulation (PWM). Select 3-pin if your chassis came with 3-pin fan headers. Select 4-pin if your chassis came with 4-pin fan headers. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select Disable to disable the fan speed control function to allow the onboard fans to run at full speed (12V/100% PWM) at all times. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

Fan1-Fan9 Speeds

▶Voltage

Voltage Monitoring

CPU1-CPU4 Vcore, +3.3V, +5VStandby, +12Vcc, -12Vcc, Vtt, VDD, 1.5V and Vbatt.

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

▶MPS Configuration

This section allows the user to configure the multiprocessors table.

MPS Revision

This feature allows the user to select the MPS Revision. Please follow the instructions given on the screen to select the MPS Revision Number. The options are 1.1 and **1.4.**

▶PCI Express Configuration

This section allows the user to configure the PCI Express slots.

Active State Power Management

Select Enabled to activate the function of power management for signal transactions between the PCI Express L0 and L1 Links. The options are Enabled and **Disabled**.

▶SMBIOS Configuration

SMBIOS SMI Support

Select Enabled to enable the function of SMBIOS SMI Wrapper support for PnP Func 50h-54h. The options are **Enabled** and Disabled.

▶Remote Access Configuration

You can use this screen to select options for the Remote Access Configuration. Use the up and down arrow keys to select an item. Use the <+> and <-> keys to change the value of the selected option.

Remote Access

This feature allows the user to enable the function of Remote Access. The options are Enabled and **Disabled**.

If the item "Remote Access" is set to Enabled, the following items will display:

Serial Port Number

This feature allows the user to select the serial port for Console Redirection. The options are **COM1** and COM2.

Base Address, IRQ

This feature allows the user to set the Base Address and IRQ settings for COM1 or COM2. The default setting for COM1 is **3F8h, 4**. The default setting for COM2 is **2F8h, 8**.

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, N, 1**; 57600 8, N, 1; 38400 8, N, 1; 19200 8, N, 1; and 9600 8, N, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None,** Hardware, and Software.

Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power_On_Self_Test (POST). Select **Always** to keep Console Redirection active all the time after POST. (**Note**: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are **Disabled**, Boot Loader, and Always.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection.The options are **ANSI**, VT100, and VT-UTF8.

VT-UTF8 Comb Key Support

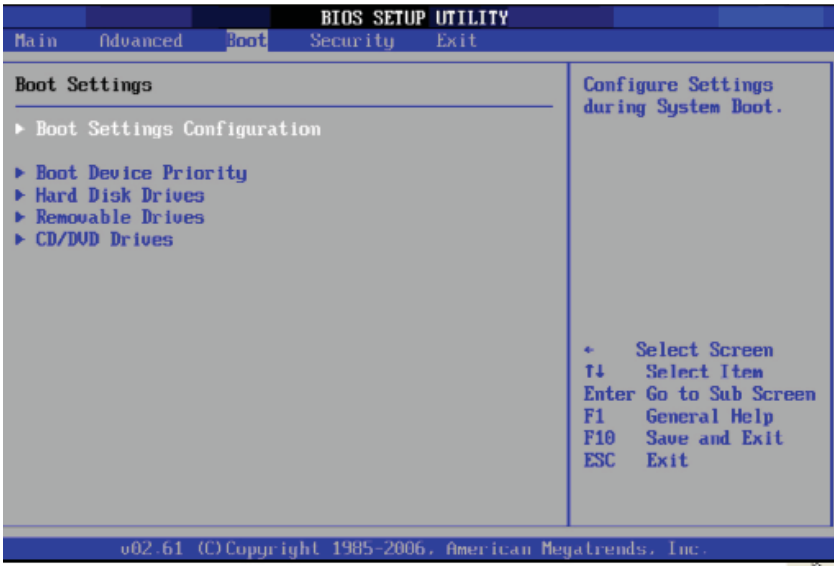
This feature allows the user to select Enabled to enable the VT-UTF8 Combination Key support for the ANSI/VT100 Terminals. The options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature allows the user to decide how many seconds the BIOS will wait before memory information is displayed. The options are **No Delay**, Delay 1 Sec., Delay 2 Sec.; and Delay 4 Sec.

4-4 Boot Configuration

This feature allows the user to configure the following items:



▶Boot Settings

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system bootup. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select **Disabled** to allow the computer system to display the POST messages. Select Enabled to allow the computer system to display the OEM logo.

AddOn ROM Display Mode

This option allows the BIOS to display AddOn ROM (read-only memory) messages. Select **Force BIOS** to display a third party BIOS during system boot. Select "Keep Current" to display the current BIOS information during system boot.

Bootup Num-Lock

This option allows the Number Lock setting to be modified during bootup. The default setting is **On**. The options are On and Off.

PS/2 Mouse Support

This option allows the PS/2 mouse support to be modified. The options are **Auto**, Enabled and Disabled.

Parity Checking

This option allows the user to enable or disable SB IDCHK# and PCI SERR# Parity Checking. The options are Enabled and **Disabled**.

Wait for 'F1' If Error

Select Enable to allow the system to wait for the user to press F1 when an error occurs. The options are **Enabled** and Disabled.

Hit 'DEL' Message Display

Select Enabled to display the Setup Message: "Press DEL to run Setup" when the user hits the DEL key. The options are **Enabled** and Disabled.

Interrupt 19 Capture

Select Enabled to allow Option ROMs to trap Interrupt 19. The options are Enabled and **Disabled**.

Boots Graphic Adapter Priority

This feature allows the user to select which graphics controller to be used as the primary boot device. The options are **Auto** and Onboard VGA.

Watch Dog Timer

If enabled, this option will automatically reset the system if the system is not active for longer than a predefined time period. The options are Enabled and **Disabled**.

▶Boot Device Priority

This feature allows the user to specify the sequence of priority for the Boot Device.

The settings are 1st Floppy Drive, CD ROM, ATAPI CDROM and Disabled. The default settings are the following:

· 1st boot device – 1st Floppy Drive

· 2nd boot device – USB:

· 3rd boot device – Network: IBA GE Slot

· 4th boot device – Network: IBA GE Slot

· 5th boot device – 1st Floppy Device

▶Hard Disk Drive

This feature allows the user to specify the boot sequence from available HDDs.

1st Drive

This option allow the user to specify the boot sequence for the first HDD.

· 1st boot device

▶Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives.

1st Drive/2nd Drive

This option allow the user to specify the boot sequence for the first Removable Drive and the second Removable Drive.

The options are **1st Floppy Drive**, USB: Pepper Virtual Disc 1 (2nd Drive), and Disabled.

▶CD/DVD Drives

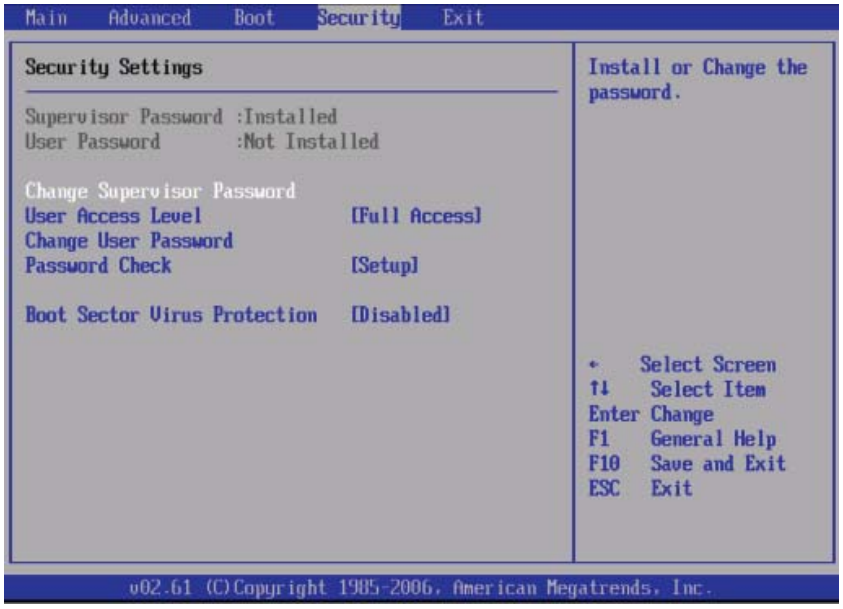
This feature allows the user to specify the boot sequence from available CD/DVD Drives.

1st Drive/2nd Drive

This option allows the user to specify the boot sequence for the First CD/DVD Drive and the Second CD/DVD Drive.

4-5 Security Settings

The AMIBIOS Setup Utility provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.



Supervisor Password

This feature indicates if a supervisor's password has been entered.

User Password

This feature indicates if a user's password has been entered.

Change Supervisor Password

Select this option and press <Enter> to access the submenu, and then enter the password.

User Access Level

Select Limited to allow the user to change the values of selected fields such as Date and Time. Select No Access to prevent the user from entering the BIOS Setup Utility. Select View Only to allow the user to enter the BIOS Setup Utility and view the settings. The user is not allowed to make changes to setup settings. Select **Full Access** to give the user the full privilege to enter the Setup Utility and change the value of any setup setting as he/she chooses.

Change User Password

Select this option and press <Enter> to access the submenu, and then type in the password.

Password Check

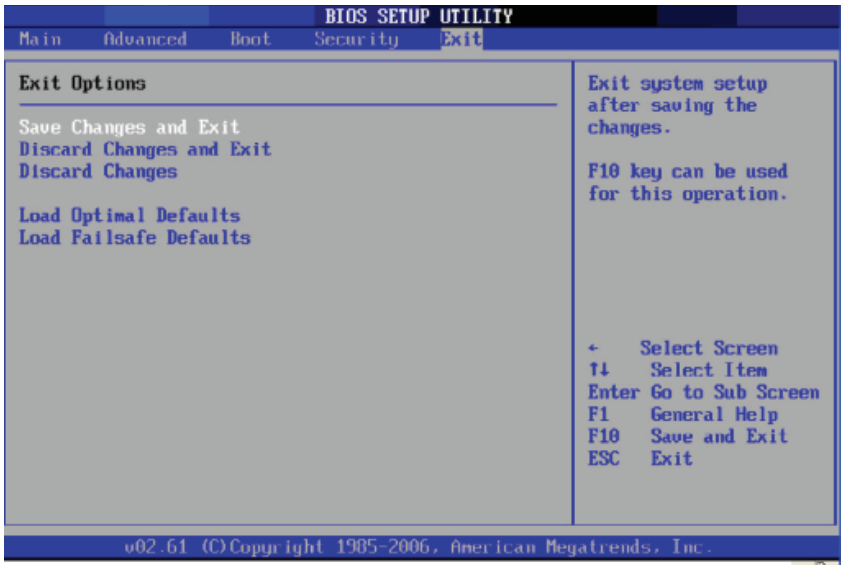
Set to **Setup** to allow the system to perform a password check when the BIOS Setup is invoked. Set to Always to allow the system to perform a password check when the BIOS Setup is invoked or when the system boots up.

Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select **Disabled** to deactivate the Boot Sector Virus Protection. Select Enabled to enable boot sector protection. When Enabled, the AMIBOIS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

4-6 Exit Options

Select the Exit tab from the AMIBIOS Setup Utility screen to enter the Exit BIOS Setup screen.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMIBIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, Select "OK" to allow the AMIBIOS Setup Utility to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

Appendix A
BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the Phoenix BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and 8 short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep + Overheat LED on: System Overheat

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen.

Notes

Appendix B
Intel HostRAID Setup Guidelines

After all the hardware has been installed, you must first configure Intel's ESB2 SATA RAID* before you install the Windows Operating System and other software drivers.

Important Notes to the User:

Note 1: If you do not wish to configure onboard SATA RAID functions, please go directly to Section C-2 and Appendix D for the OS & Other Software Installation.

Note 2: This chapter describes RAID Configuration Instructions for the Intel ESB2 Host RAID Controller designed for the Windows OS. To configure the LSI SAS HostRAID, please refer to the LSI folder for the LSI SAS HostRAID Utility and documentation. The LSI folder is included in the CD-ROM that came with your motherboard.

B-1 Introduction to Serial ATA and Parallel ATA

To configure the SATA RAID functions, you must first use the Intel ESB2 SATA RAID Utility program to configure the RAID Level that you desire before installing the Windows XP/2000/2003 operating system and other software drivers. (The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard.) Note that the current version of the ESB2 SATA RAID Utility can only support Windows XP/2000/2003 Operating Systems.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link, which supports transfer rates up to 3.0 Gbps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis. In addition, the cables used in PATA are limited to a length of 40cm, while Serial ATA cables can be up to one meter in length. Overall, SATA provides better functionality than PATA.

Introduction to the Intel ESB2 Serial RAID

Located in the South Bridge of the 7300 chipset, the I/O Controller Hub (ESB2) provides the I/O subsystem with access to the rest of the system. It supports 1-channel UltraATA/100 Bus Master IDE controller (PATA) and four Serial ATA (SATA) ports. The ESB2 supports the following PATA and SATA device configurations: Legacy mode and Native mode.

The Intel HostRAID Configurations

The following types of Intel's HostRAID configurations are supported:

RAID 0 (Data Striping): this writes data in parallel, interleaved ("striped") sections of two hard drives. Data transfer rate is doubled over using a single disk.

RAID1 (Data Mirroring): an identical data image from one drive is copied to another drive. The second drive must be the same size or larger than the first drive.

RAID 10 (Striping & Mirroring): RAID 0 and 1 schemes are combined (without parity information) to get the benefits of both.

RAID 5: both data and parity information are striped and mirrored across three or more hard drives.

The Intel Matrix Storage

The Intel Matrix Storage, supported by the ESB2, allows the user to create RAID 0, RAID 1, RAID 10 and RAID 5 sets by using only four identical hard disk drives. The Intel Matrix Storage Technology creates two partitions on each hard disk drive and generate a virtual RAID 0, RAID 1, RAID 10 and RAID 5 sets. It also allows you the change the HDD partition size without any data.

Configuring BIOS settings for SATA RAID Functions (Native Mode)

1. Press the <Del> key during system bootup to enter the BIOS Setup Utility.

Note: If it is the first time powering on the system, we recommend you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Settings. Once in the "Exit" settings, Scroll down to select "Load Optimized Default Settings" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings for the BIOS.

3. Use the arrow keys to select the "Main" section in BIOS.

4. Scroll down to "SATA Controller Mode" and press the <Enter> key to select "Enhanced"

5. Scroll down to "SATA RAID Enabled" and press <Enter>. Then, select "Enabled."

6. Scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

7. Once you've exited the BIOS Utility, the system will re-boot.

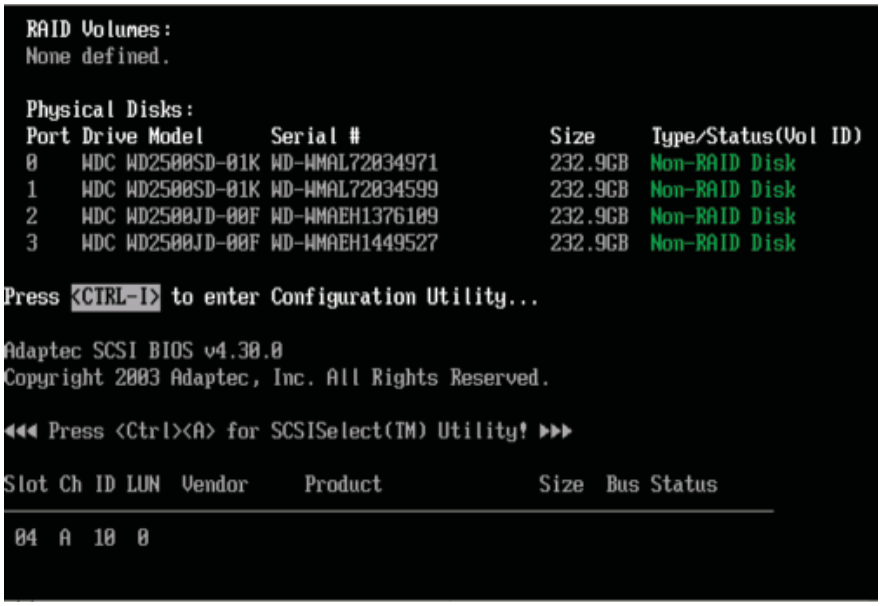
8. During the system boot-up, press the <Ctrl> and <I> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: *Press <Ctrl> <I> for the* Intel *RAID Configuration Utility*.

Note: The Intel RAID Configuration Utility is only available for systems with two or more drives installed. The Intel RAID Utility screen will not display in systems with one drive installed.

Using the Intel ESB2 SATA RAID Utility Program

1. Creating, Deleting and Resetting RAID Volumes:

a. After the system exits from the BIOS Setup Utility, the system will automatically reboot. The following screen appears after Power-On Self Test.

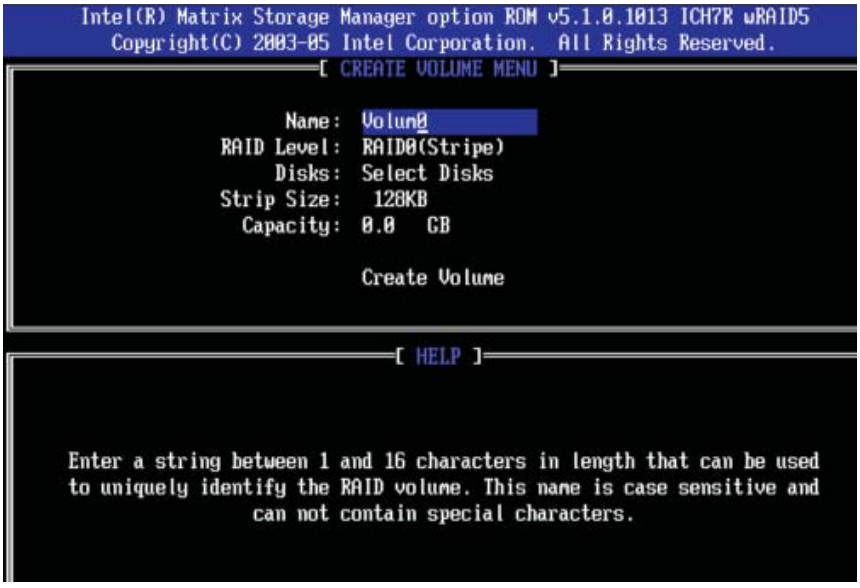

RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 WDC WD2500SD-01K WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01K WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00F WD-WMAEH1376109 232.9GB Non-RAID Disk
3 WDC WD2500JD-00F WD-WMAEH1449527 232.9GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...
Adaptec SCSI BIOS v4.30.0
Copyright 2003 Adaptec, Inc. All Rights Reserved.
Press <Ctrl><A> for SCSISelect(TM) Utility!
Slot Ch ID LUN Vendor Product Size Bus Status
04 A 10 0

b. When you see the above screen, press the <Ctrl> and the <I> keys simultaneously to have the main menu of the SATA RAID Utility appear:

Note: All graphics and screen shots shown in the manual are for reference only. The screen shots shown in the manual do not imply Supermicro's endorsement or non-endorsement on any 3rd party's product. Your screens may or many not look exactly the same as the graphics shown in this manual.

Creating a RAID 0 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volun0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 0 set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select RAID 0 (Stripe) and hit <Enter>.

d. When the Disks item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (*See the note on Page C-3) displays:

[SELECT DISKS]
Port Drive Model Serial # Size Status
0 WDC WD2500SD-01KCB0 WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01KCB0 WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00FYB0 WD-WMAEH1376100 232.9GB Non-RAID Disk
3 WDC WD2500JD-00FYB0 WD-WMAEH1449527 232.9GB Non-RAID Disk
Select 2 to 4 disks to use in creating the volume.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete

e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

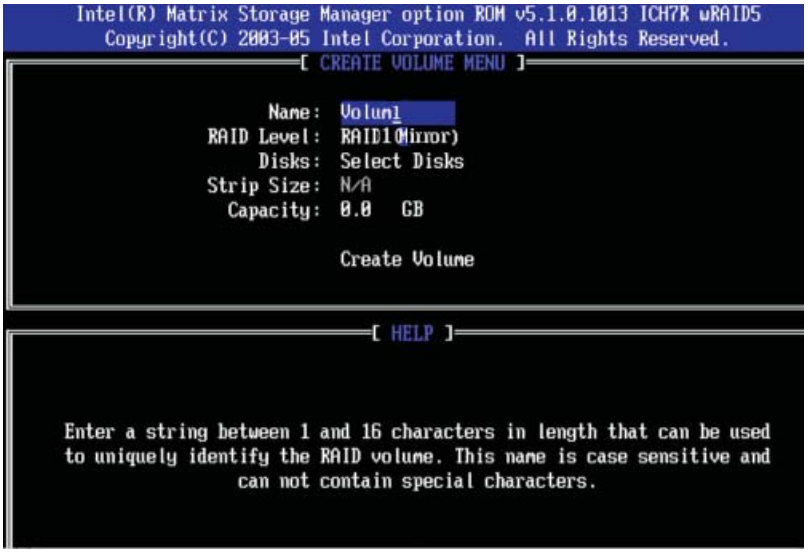
f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranging from 4 KB to 128 KB for the RAID 0 array, and hit <Enter>. (N**ote**: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.)

g. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

h. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 1 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volun1
RAID Level: RAID1(Mirror)
Disks: Select Disks
Strip Size: N/A
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 1 set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select RAID 1 (Mirror) and hit <Enter>.

d. When the Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

e. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

f. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 10 (RAID 1+ RAID 0):

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:

Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volum10
RAID Level: RAID10(RAID0+1)
Disks: Select Disks
Strip Size: 128KB
Capacity: xxx.x GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 10 set and press <Enter>.

c. When RAID Level item is highlighted, use the <Up Arrow>, <Down Arrow> keys to select RAID 10 (RAID1 + RAID0) and hit <Enter>.

d. When the Stripe Size is highlighted, use the <Up Arrow>, <Down Arrow> keys to select the stripe size from 4 KB to 128 KB for your RAID 10 and hit <Enter>. The default setting is 64 KB. (N**ote**: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size.)

e. When the RAID Volume Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

f. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

g. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 5 Set (Parity):

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:

Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volum5
RAID Level: RAID5(Parity)
Disks: Select Disks
Strip Size: 64 KB
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 5 set and press <Enter>.

c. When the Raid Level is highlighted, use the <Up Arrow>, <Down Arrow> keys to select RAID 5 (Parity) and hit <Enter>.

d. When the Disk item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (*See the note on Page C-3) displays:

[SELECT DISKS]
Port Drive Model Serial # Size Status
0 WDC WD2500SD-01KCB0 WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01KCB0 WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00FYB0 WD-WMAEH1376103 232.9GB Non-RAID Disk
3 WDC WD2500JD-00FYB0 WD-WMAEH1449527 232.9GB Non-RAID Disk
Select 2 to 4 disks to use in creating the volume.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete

e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranging from 4 KB to 128 KB for the RAID 5 array, and hit <Enter>. (N**ote**: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.)

g. Enter your desired RAID volume capacity and press <Enter> when the capacity item is highlighted. The default setting is the maximum capacity allowed.

h Press Enter when the Create Volume item is highlighted. A warning message displays.

i. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Deleting RAID Volume:

(**Warning**: Be sure to back up your data before deleting a RAID set. You will lose all data on the disk drives when deleting a RAID set.)

a. From the main menu, select item2-Delete RAID Volume, and press <Enter>.

b. Use the <Up Arrow>, <Down Arrow> keys to select the RAID set you want to delete and press <Del>. A Warning message displays.

c. When asked "Are you sure you want to delete this volume (Y/N), press "Y" to delete the RAID volume, or type "N" to go back to the Delete Volume menu.

Resetting to Non-RAID and Resetting a RAID HDD

(**Warning:** Be cautious when you reset a RAID volume HDD to non-RAID or Resetting a RAID HDD. Resetting a RAID volume HDD or Resetting a RAID HDD will reformat the HDD and delete the internal RAID structure on the drive.)

a. From the main menu, select item3-Reset Disks to Non- RAID, and press <Enter>. The following screen will appear:

Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
[RESET RAID DATA]
Resetting RAID data will remove internal RAID structures
from the selected RAID disks. By removing these structures,
the drive will revert back to a non-RAID disk.
Port Drive Model
Serial #
Size Status
Select the disks that should be reset.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete
[↑↓]-Select
[ESC]-Exit
[ENTER]-Select Menu

b. Use the <Up Arrow>, <Down Arrow> keys to highlight the RAID set drive to reset and press <Space> to select.

c. Press <Enter> to reset the RAID set drive. A Warning message displays.

d. Press "Y" to reset the drive, or type "N" to go back to the main menu.

Exiting the Intel Matrix Storage Manager Utility:

a. From the main menu, select item4-Exit, and press <Enter>. A warning message will appear.

b. Press "Y" to reset the drive, or type "N" to go back to the main menu.

B-2 Installing a New Windows OS to a RAID System

a. Insert the Microsoft the Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

b. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

c. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

d. Insert the driver diskette-"Intel AA RAID XP/2000/2003 for ESB2 into Drive A: and press the <Enter> key.

e. Choose the Intel(R) ESB2 SATA RAID Controller from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

f. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

g. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then, continue the Windows OS installation.

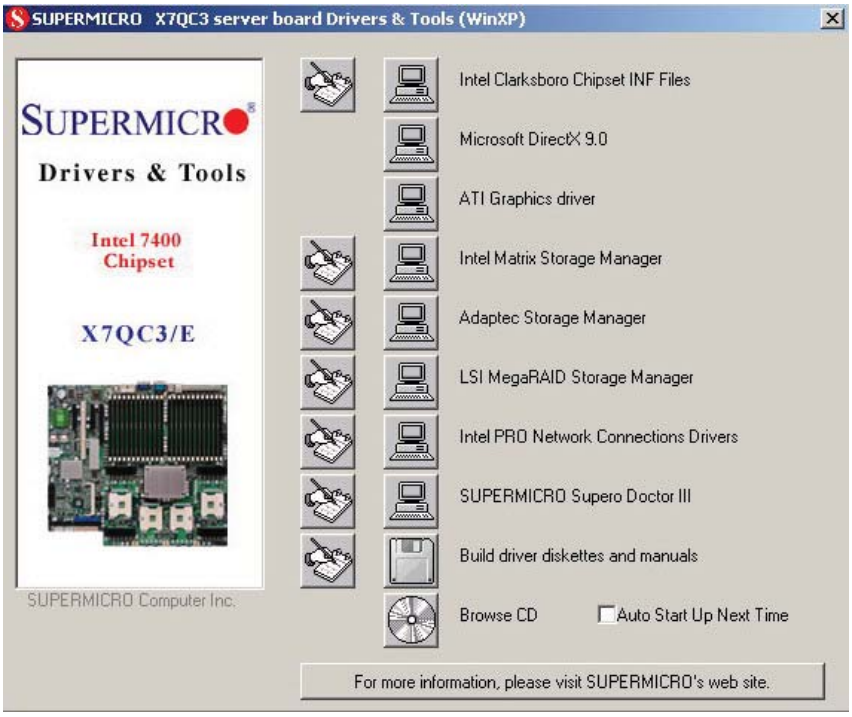
h. After the Windows OS Installation is completed, the system will automatically reboot.

(N**ote**: the current version of the ESB2 SATA RAID Utility can only support the Windows XP/2000/2003 Operating System.)

Appendix C
Installing Other Software Programs and Drivers

C-1 Installing Drivers other than the Adaptec Embedded Serial ATA RAID Controller Driver

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



Driver/Tool Installation Display Screen

Notes: 1. Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

2. When making a storage driver diskette by booting into a Driver CD, please set the SATA Configuration to "Compatible Mode" and configure SATA as IDE in the BIOS Setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.

C-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included in the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note 1: Both default user name and password are **ADMIN**.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

Supero Doctor III Interface Display Screen-II (Remote Control)

(**Note**: The SD III Software can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.)

Notes